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PART II:

DEPARTMENT OF TRANSPORTATION

Materials Transportation Bureau

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HAZARDOUS MATERIALS REGULATIONS

Consolidation of Title 14, Part 103, and Title 46, Part 146, in Title 49

Title 14—Aeronautics and Space

CHAPTER I—FEDERAL AVIATION ADMINISTRATION, DEPARTMENT OF TRANSPORTATION

[Docket No. HM-112]

PART 103—TRANSPORTATION OF DANGEROUS ARTICLES AND MAGNETIZED MATERIALS

Revocation of Part

For the reasons set forth in a document consolidating the Department of Transportation's hazardous materials regulations in Title 49, Code of Federal Regulations appearing elsewhere in this Part II of the FEDERAL REGISTER, 14 CFR PART 103 is revoked effective July 1, 1976.

(49 U.S.C. 1472(h)(1), 49 CFR 1.53(h))

Issued in Washington, D.C. on March 31, 1976.

JAMES T. CURTIS, Jr.,
Director, Materials Transportation Bureau.

[FR Doc.76-9660 Filed 4-14-76;8:45 am]

Title 46—Shipping

CHAPTER I—COAST GUARD, DEPARTMENT OF TRANSPORTATION

SUBCHAPTER N—DANGEROUS CARGOES

[Docket No. HM-112]

PART 146—TRANSPORTATION OR STORAGE OF EXPLOSIVES OR OTHER DANGEROUS ARTICLES CR SUBSTANCES AND COMBUSTIBLE LIQUIDS ON BOARD VESSELS

Partial Revocation of Part

For the reasons set forth in a document consolidating the Department of Transportation's hazardous materials regulations in Title 49, Code of Federal Regulations appearing elsewhere in this Part II of the FEDERAL REGISTER, Subparts 146.01-146.28 and 146.30 of 46 CFR are revoked effective July 1, 1976.

(46 U.S.C. 170(7), 49 CFR 1.53(f))

Issued in Washington, D.C. on March 31, 1976.

JAMES T. CURTIS, Jr.,
Director, Materials Transportation Bureau.

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Title 49—Transportation

CHAPTER I—MATERIALS TRANSPORTATION BUREAU, DEPARTMENT OF TRANSPORTATION

[Docket No. HM-103; HM-112; Amdt. Nos. 171-32, 172-29, 173-94, 174-26, 175-1, 176-1, 177-35]

CONSOLIDATION OF HAZARDOUS MATERIALS REGULATIONS

On January 24, 1974, the Hazardous Materials Regulations Board (the Board) published two proposals identified as Docket No. HM-103; Notice No. 73-10 (39 FR 3164) and Docket No. HM-112; Notice No. 73-9 (39 FR 3022). HM-103 proposed to adopt a Hazard Information System to enhance the identification and communication of hazards during transportation and made other proposals pertaining to shipping papers, package marking, package labeling, and transport vehicle placarding. HM-112 proposed to consolidate the air, water, and surface transportation hazardous materials regulations of the Department into one volume of the Code of Federal Regulations, 49 CFR Parts 100-189. In addition, HM-112 proposed several other miscellaneous amendments.

The reasons for the proposals under HM-103 and HM-112 were explained in the preamble to these dockets. Interested persons were invited to participate in these rule-making proceedings. Since the closing date of the comment period for Dockets HM-103 and HM-112, the Department of Transportation has established the Materials Transportation Bureau (the Bureau) which has been delegated the rule-making authority previously exercised by the Hazardous Materials Regulations Board.

In consideration of many comments received on implementing a hazard information system, and to give the public an opportunity to evaluate other hazard information systems, the Board published Notice 73-10, Docket HM-103, on June 25, 1975 (40 FR 26687), terminating its original proposal under that docket establishing a two-digit number to identify and communicate hazards during transportation. The remainder of the docket pertaining to shipping papers, package marking, package labeling, and transport vehicle placarding was retained although modified to some degree based on recommendations received. All comments received that pertain to the elements of the HM-103 Notice retained by the Board have been given full consideration by the Bureau before it decided on the amendments made herein. Of the many comments received, several were not specifically directed to the contents of Docket HM-103 pertaining to the elements retained by the Board. Such comments will be given separate consideration and may be the subject of future rule-making action.

Some of the most significant amendments under HM-103 are the adoption of a uniform vehicle placarding system, a uniform marking system for cargo tanks, portable tanks, and tank cars, and an improved format for shipping paper entries. These amendments and the package labels are the major elements of a system the Board had proposed for better identification of hazards in transportation. Many commenters had objected to th complexity of the placarding system that had been proposed in the Notice. The Bureau reconsidered the matter, believes some of the objections valid and has simplified considerably the implementation of the placarding system.

The Bureau believes that the action taken to place the shipping paper, marking, labeling, and placarding requirements in a separate Part will simplify the effort by the shippers and carriers in locating the pertinent requirements. Comments addressed to the changes retained by the Bureau under Docket HM-103 are discussed under the respective Part designations with references from 49 CFR, 14 CFR, and 46 CFR, parenthetically noted.

All comments received on Docket HM-112 have been given full consideration by the Bureau before a decision was made on the amendments contained herein. Of the many comments received, a number were not specifically directed to the content of Docket HM-112. Such comments will be given separate consideration and may be the subject of future rule-making action. In many cases, amendments have been introduced which are purely editorial in nature, such as the substitution of "subchapter" for "chapter", rewording for clarification, etc. In each case where a substantive change is not evident, the amendment has been identified as "no substantive change". In addition, references to rail express shipments and to conditions related to "the emergency" have been deleted. In the case of rail express, this service is no longer available. References to "the emergency" were adopted during the Second World War. These provisions which were temporary relaxations in the regulations are no longer appropriate. These changes have been identified. Another general change which appears in these amendments is in the language identifying authorized carriers to encompass common, contract and private carriers since the safety provisions of these regulations are applicable to all carriers. Also, references are made to § 172.330 which provides marking requirements for packagings to improve hazard communication.

Some of the most significant amendments under HM-112 have resulted from the incorporation of the U.S. Coast Guard Regulations, 46 CFR Part 146, and Federal Aviation Regulations, 14 CFR Part 103, into 49 CFR Parts 170-177. In this consolidation, the Bureau has replaced the long-standing acceptance of rail express criteria as the basis for determining the rules applicable to aircraft. In its place, the Bureau has adopted the approach of evaluating commodities in terms of their direct implications to aircraft operations as a means of establishing more realistic standards for the transportation of hazardous materials in air commerce. For consistency, the Bureau has decided to apply this same approach in classifying materials transported by vessel that were previously classified as "Hazardous Articles". In Notice 73-9 there were proposed regulations for the shipment of flammable and combustible liquids aboard vessels (§ 173.116a) that were not consistent with regulations of these same materials shipped via other modes of transportation. This inconsistency involved the different methods and temperature ranges used in determining flashpoints of flammable and combustible liquids. In order to correct this disparity, another notice (Notice 73-9A) was published under this docket on September 8, 1975, that revised the flammable and combustible liquid definition criteria to be uniform for all modes of transport. A hearing was held on October 1, 1975, and all of the written

comments filed in response to the notice supported the change to standardize the definitions. In order to expedite implementation of uniform criteria, the action was transferred to Docket HM–133 and published December 31, 1975 (40 FR 60030) with certain corrections published on February 23 1976 (41 FR 7497). The amendments published herein reflect those changes except certain matters related to the original proposals made under Docket HM–112 on January 24, 1974.

To address the specific additional requirements for transportation by air or water, the concept of "Other Regulated Materials" ORM–A, B, and C was introduced to include those materials identified as "Hazardous Articles" when transported by water, "Other Restricted Articles" when transported by air, and materials corrosive only to aluminum. On September 8, 1975, an extension of the effective date was published (40 FR 41527) pertaining to materials corrosive only to aluminum. It was stated that disposition of the classification of these materials would be in the amendments made herein. Since these amendments class such materials as ORM–B, no further action under Docket HM–57 is necessary and it is hereby terminated so far as materials corrosive only to aluminum are concerned. HM–112 also proposed an additional category, ORM–D, to provide certain exceptions for limited quantity packages of hazardous materials. Included in this category are those items identified as "Consumer Commodities". It is the Bureau's opinion that the packaging of those hazardous materials available to the general public in retail outlets provides an adequate level of safety in the transportation environment except to a limited degree that requires their identification when carried aboard aircraft. Accordingly, ORM–D materials are not required to be labeled and they are not required to be identified on shipping papers except where offered for transportation aboard aircraft.

In light of the Bureau's conclusions regarding ORM–D materials, the Board's proposed deletion of the marking and labeling exceptions for harzardous materials packaged in limited quantities has been modified. Limited quantities will continue to be excepted from labeling (except when shipped by air) and specification packaging requirements, but they must now be marked in accordance with the marking requirements. However, with regard to poisons, the Bureau believes that positive identification of the material and its associated hazards is essential particularly to preclude the combination in transportation of poisons and foodstuffs. Accordingly, it has been decided to implement the requirement for both marking and labeling of Poison B materials as was proposed in the notice.

Several comments on HM–112 suggested that the Bureau consider the establishment of degrees of hazard within each classification, such as "Highly Corrosive" in comparison to "Corrosive", etc. While the suggestion has merit, the difficulties of establishing parameters for such gradations within a classification and the necessarily arbitrary selection of transition points lead the Bureau to conclude that such proposals require further study and should not be adopted at this time. In addition, Docket HM–112 proposed extensive revisions to Parts 170.171. In particular, rulemaking procedures in Part 170 would have been shifted to Part 171 and general information and regulations in Part 171 would have been redesignated Part 170. In consideration of comments received, as well as the recent replacement of Part 170 in its entirety by a new Part 102, which prescribes procedures applicable to all of the Bureau's rule-making activities (40 FR 31767, July 29, 1975) and a new Part 107, Subpart B, which prescribes exemptions procedures applicable to all hazardous materials regulations (40 FR 48466, October 15, 1975), the Bureau has decided to retain the present designation of Part 171 and to delete many of the proposed changes. Comments addressed to the remaining changes are discussed under the respective section designations with the HM–112 Notice designations parenthetically noted.

The basic purpose of these amendments is to achieve editorial clarity and uniformity in existing regulations. Substantive changes are primarily related to matters of identification and classification of certain materials moving in commerce.

In accordance with section 102(2)(c) of the National Environmental Policy Act (Pub. L. 91–190, 42 U.S.C. 4321 et seq.) the Bureau has evaluated the environmental impact of these amendments. On the basis of that evaluation, the Bureau has concluded that this regulatory consolidation is not a major Federal action significantly affecting the quality of the human environment and, accordingly, that the preparation of an environmental impact statement is not required.

By finalizing the proceedings in Dockets HM–103 and HM–112 through the issuance of the amendments set forth below, the Materials Transportation Bureau is completing the first major phase of its continuing effort to improve, update, and simplify the regulations governing the shipment and transportation of hazardous materials. The next phase, which the Bureau intends to embark upon as soon as practicable, will be a recodification of the entire body of hazardous materials regulations. Whereas the principal purpose of the HM–103/112 phase has been the consolidation and substantive improvement of specific segments of the regulations, the purpose of recodification phase will be to rearrange and revise the language of the regulations in comprehensible and accessible form to reduce inconsistency, redundancy and obsolescence. In an effort to minimize the number of future recodification language changes to be made in the parts now being restated in their entirety (i.e. Parts 171, 172, 174, 175, and 176), numerous non-substantive changes in terminology and style have been incorporated into those parts.

In the remarks which follow, an attempt has been made to address each section affected by this amendment. The extent of the change from current regulations is summarized, any modification to the changes as proposed in the notices is indicated and the Bureau's response to comments received is noted.

PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS

171.1 (HM–112, § 170.1) Revised to set forth purpose and scope of the regulations in subchapter.

171.2 New section setting forth the application of Department of Transportation Regulations to the transportation of hazardous materials.

171.6 (HM–112, § 170.6) The proposed amendments to the requirements and conditions for special permits have been deleted in view of the revocation of § 171.6 by the exemption procedures prescribed in new Part 107 published under Docket HM–127 in the FEDERAL REGISTER on October 15, 1975 (40 FR 48466).

171.7 (HM–112, § 170.7) Additional matter incorporated by reference. The incorporations of the IATA and IMCO material was not proposed but is being adopted in this amendment because the Bureau considers these materials pertinent. Several comments recommended reference to the current edition of any standard to avoid obsolescence. The Bureau recognizes the value of such an approach but considers it impractical since prior review of applicable standards would not be possible and unacceptable requirements would result. Also, recognizes footnotes as regulations.

171.8 (HM–112, § 170.30) A new section of definitions and abbreviations. In response to comments, the Bureau has incorporated in this section all of those definitions which appear to be applicable to one or more modes of transportation. New definitions have been added and others rewritten for clarification.

171.9 Existing 171.9 on Vessel Stores is deleted as unnecessary; rules of construction are adopted under same section designation.

171.11 Paragraph (c) with respect to shipper compliance with Federal Railroad Emergency Orders has been deleted. By petition dated July 16, 1975, the Hazardous Materials Advisory Committee (HMAC) of the Transportation Association of America took exception to new regulations published on December 12, 1974, under Docket HM–123 (39 FR 43310) that require shippers to comply with the provisions of Federal Railroad Emergency Orders as those orders pertain to shippers. Emergency Order No. 5, issued on October 25, 1974, imposed particular handling requirements for certain tank cars and a special notation on shipping papers. Since a provision pertaining to the identification of tank cars has been added to new section 172.203, the Bureau agrees with HMAC that section 171.11(c) and section 173.5 (c) (contains language identical to section 171.11) should be deleted.

171.12 (HM–112, §§ 170.12 and 173.9) Clarification of the requirements for

international shipments to recognize applicability of the U.S. regulations to import and export shipments as well as to shipments being transferred in a U.S. port area and recognizes certain IMCO provisions. Makes provision for marking packages with specification identifications when they meet the requirements of Part 178. This previously was authorized only for export shipments by § 173.9 (c). It should be noted that paragraph (b) applies only to the IMCO class and label, not to the shipping description, marking and packaging of imported or exported hazardous materials. The Bureau believes that these newly adopted provisions will facilitate the movement of materials in international commerce.

171.14, 171.15, and 171.16 (HM–112, §§ 170.14, 170.15, and 170.16) No substantive change.

PART 172—LIST OF HAZARDOUS MATERIALS AND HAZARDOUS MATERIALS COMMUNICATIONS REGULATIONS

Part 172 has been completely revised.

172.1 Sets forth the purpose and scope of Part 172.

172.3 Sets forth the applicability of Part 172.

172.100 (HM–112, § 172.100) Explains the purpose and use of the Hazardous Materials Table. The increased number of people coming into contact with the regulations for the first time has prompted the Department to attempt a more elaborate explanation of the purpose and use of the Hazardous Materials Table. Much difficulty has been experienced by many individuals in attempting to use this table. The evaluation of material descriptions and the selection of the proper shipping name are probably the most common problems encountered. Once the correct class and shipping name has been determined further use of the table is, we believe, quite straightforward.

172.101 (HM–112, § 172.101) The Hazardous Materials Table was proposed with a somewhat modified format from that in current use and the table has been further modified for this amendment based on comments received. The United Nations class and label column which appeared in the proposed table has been deleted in the amended version. The presence of the UN class and label designation in the commodity table was felt to be undersirable since these are not regulatory but only informational items. There were several requests for the addition of the UN class and commodity numbers to the table.

We believe that this has merit from the standpoint of preparation of international shipments, however, due to space limitations it was not feasible to include these items in the commodity table. It is anticipated that an auxiliary table containing this information along with some other helpful information may be prepared at a later date. The content of this table, i.e., its regulatory nature, will determine whether it is included as part of the Code or as an addition to the index which is currently published as a separate non-regulatory document. Other comments concerning the table indexed by specific column or material or shipping name description are as follows:

172.101 Column 2. *Hazardous material descriptions* and proper shipping names. Major comments suggested the addition or deletion of certain entries. IATA submitted a large list of commodity names or descriptions for addition to the table in order that the international tariff and the United States Regulations would be more nearly uniform. It is believed that the addition of a number of these names has merit, however, it was felt that the addition of a specific material to the table with the subsequent packaging and labeling requirements, should not be done without affording the opportunity for public comment on these entries. Additional entries made at this time were very limited and were of a type generally devised to eliminate some confusion that existed concerning the hazard class of a solution or device. Potential additions and deletions to the Table of Hazardous Materials is a subject of continual review. When appropriate, public will be given an opportunity to comment on such changes. Substantive changes to the requirements pertaining to entries in column 1 are discussed under comments addressed to specific commodities as follows:

Acetaldehyde. Because of its high volatility, low flashpoint, wide flammability limits (4–6 percent in air) and low ignition temperature, is no longer permitted exceptions for limited quantities.

Acetone Cyanohydrin. Due to its low decomposition temperature with evolution of extremely toxic gases is fully regulated regardless of the quantity being shipped and is forbidden on passenger-carrying aircraft.

Acetylene. Due to its inherent instability and subsequent requirements for stabilization for shipment is fully regulated regardless of the quantity being shipped and is forbidden on passenger-carrying aircraft.

Acrylonitrile. In addition to being poison by skin absorption, may polymerize with the evolution of heat and is flammable even in dilute solutions with water. This material is therefore considered sufficiently hazardous that it is completely regulated regardless of the quantity shipped and is forbidden on passenger-carrying aircraft and passenger vessels.

Allyl Alcohol. Previously classified as a Poison B is now classified as a flammable liquid requiring both a flammable liquid and poison label. In keeping with this change, the maximum quantity permitted in one package by air has been adjusted to those normally permitted flammable liquids.

Aluminum Chloride. Has been deleted as a specific entry due to the uncertainty that exists concerning its correct classification. Comments were received to the fact that this material in the dry state is pyrophoric in which case this material would be classed as a flammable solid. Previous comments in HM–57 addressed its skin corrosivity and metal corrosivity. Additional tests have been requested on this material and future consideration will be given to addition of this material to the table.

Aluminum Powder. Is believed to be sufficiently hazardous in a finely divided uncoated form to warrant classification as a flammable solid. This is an asterisk entry, meaning that not all forms are regulated. With the present qualitative definition of a flammable solid, some judgement, based on experience with the material must be used for classification of the powdered material .When a quantitative definition of a flammable solid becomes effective the classification of all flammable solids will be subject to reevaluation.

Ammonium Hydroxide (with not more than 44 percent Ammonia); Ammonia Solution (with 44 percent or more ammonia in water); Ammonia Solution (with not more than 44 percent ammonia in water) See Ammonium hydroxide; and Crude Nitrogen Fertilizer Solution (more than 25.4 p.s.i.g.). In the current 49 CFR these commodities are listed as asterisk entries, without the parenthetical qualifying phrase which describes the concentration of ammonia. In the nonflammable compressed gas class of entries the current "*Aqua ammonia solution containing anhydrous ammonia" has been replaced with a clearer descriptive name (Ammonia solution). The asterisk has been removed, and the qualifying phrase added "with 44 percent or more ammonia in water". According to vapor pressure tables of pure ammonia water solutions, at 44 percent ammonia the vapor pressure exceeds 40 p.s.i.a. at 70° F. which is one definition of a nonflammable compressed gas. Crude nitrogen fertilizer may contain compounds other than ammonia and water which contribute to the vapor pressure of the solution, therefore, the qualifying phrase "(more than 25.4 p.s.i.g.)" was added in place of the asterisk. The definition of these commodities remains unchanged. The introduction of a new entry of ammonium hydroxide in the corrosive class is to identify solutions which it is believed in the past were shipped as corrosive liquids, n.o.s. The minimum concentration of 10 percent was proposed based on past exemptions for mineral acids and alkalies in concentrations less than 10 percent. Corrosivity data establishing the minimum concentration that should be regulated as corrosive has not yet been obtained, therefore the entry for ammonium hydroxide has been made an "asterisk" entry with no minimum concentration specified.

Ammonium Perchlorate. For many years it has been the practice to ship certain grades of ammonium perchlorate as Class A Explosives. Title 46 CFR recognized this hazard and listed ammonium perchlorate of 15 micron particle size or less as Explosive A. There is some disagreement over the particle size at which the explosive characteristics become significant. This disagreement may be based to some extent on the method used to measure the particle size and particle size distribution. The effect of

moisture on the sensitivity has not been addressed in either the testing or the classification. The particle size description has therefore been removed in the Hazardous Materials Table and the entry asterisked with a reference to Explosive A. The entry of Ammonium perchlorate with the class listed as oxidizer is also an asterisk entry, referring to its potential as an Explosive Class A, i.e., ammonium perchlorate must be classed either as an Explosive A or an Oxidizer.

Ammonium Permanganate is sufficiently sensitive to initiation that shipment is forbidden in several foreign countries. It is believed that exceptions should no longer be permitted for this material. It is believed that this material is sufficiently hazardous that it should be completely regulated regardless of the quantity shipped and is forbidden in air transport or on passenger vessels.

Ammonium Sulfide. One shipper reports that this material as a 50 to 55 percent solution in water will not only flash but will sustain combustion for an appreciable period of time, depending upon the temperature of the solution. Ammonium sulfide solutions were thus classified as a flammable liquid as an asterisk entry rather than ORM–A as originally proposed.

Amyl Acetate. There are several isomers of this compound, and several technical grades. Several comments were received on whether or not this material should be classed as a flammable or as a combustible liquid because of the wide range of flash points recorded. This problem is not unique with this compound but occurs with a number of other materials and the class was determined from similar reasoning, i.e., the available flash points were reviewed and the majority of flash points were less than 100° F. Amyl acetate was thus classed as a flammable liquid. This does not prevent a shipper with a material of this general description, with a flash point of 100° F. or more, from shipping the material as a combustible liquid n.o.s.

Beryllium Compounds. Toxicity data were submitted on several beryllium compounds showing these materials did not meet the definition of a poison according to 49 CFR, therefore an asterisk was added to this entry.

Bromochloro Methane. Toxicity data were submitted on this material indicating no need for regulation, therefore, it was removed from the commodity table.

Butyl Acetate. Comments were received to the effect that the flash point of the several isomers of butyl acetate span the 73° F. range and therefore packaging requirements are different for different isomers. Similar comments were received for amyl acetate and hexaldehyde. The Bureau believes that the actual flash point of the material being shipped should be used to determine its classification and the packaging requirements for this commodity. If the flash point spans the 100° F. point and classification as either flammable liquid or combustible liquid is possible, the material being shipped should be classed and named accordingly. Butyl acetate is listed only as a flammable liquid. If the material being shipped has a flash point greater than 100° F. it should be shipped as combustible liquid, n.o.s., as paint thinner, combustible liquid, or some other entry appropriate for a combustible liquid.

Calcium Carbide. Packaging requirements, based on current industry practices were submitted and were considered by the Bureau to be preferable to the general packaging requirements for a flammable solid n.o.s., thus a new packaging section was added for calcium carbide.

Combustible Liquids. There were numerous comments concerning the proposed reduction in maximum quantity of combustible liquids permitted by air from 55 gallons to 15 gallons. A re-evaluation of this problem, considering the fact that the minimum flash point of a combustible liquid has been specified as 100° F. and also that there are no regulations for combustible liquids in containers less than 110 gallons, has resulted in the Bureau removing any restriction on the maximum quantity of combustible liquids by air.

Divinyl Ether. Due to its high volatility, low flash point, and anesthetic properties, is no longer permitted exceptions for limited quantities.

Ethyl Ether. Exceptions for limited quantities have been deleted for ethyl ether because of its low flash point, low boiling point and anesthetic properties. The Bureau believes it should be forbidden aboard passenger-carrying aircraft.

Ethyl Methyl Ether. Due to its high volatility, low flash point, and anesthetic properties, is no longer permitted exceptions for limited quantities.

Ethyl Nitrite. Due to its high volatility (low boiling point) low flash point, and low explosion temperature (194° F.) is no longer permitted exceptions for limited quantities.

Fluorine. The preamble to HM–112, Notice 73–9 listed fluorine as one of the commodities for which the classification had been changed. The table (172.101) listed fluorine without any change in the class. This amendment makes the change to the nonflammable gas class as intended, however for hazard identification the labels specified are POISON and OXIDIZER. These were felt to be more meaningful than the nonflammable compressed gas label.

Gas Mixtures. Carbon dioxide-oxygen mixtures and helium-oxygen mixtures will be tested when a quantiative definition of an oxidizer gas has been accepted, and the material classed accordingly. Until that time the correct classification of oxygen containing small amounts of carbon dioxide or helium remains the responsibility of the shipper.

Hexamethylene Imine. U.S. Department of Health, Education, and Welfare, Toxic Substances List of 1974 gives an oral LD50 of 33mg./kg. for rats. Therefore, a poison label was added.

Hydrazine. Was proposed to be reclassed as flammable liquid in the notice on the basis that it is a thermally unstable material. For the amendment, hydrazine has been broken into two classes depending on concentration: 64 percent or more is classed as a flammable liquid (concentrations from 64 percent up to 100 percent hydrazine are used as monopropellant explosives) and less than 64 percent is classed as corrosive material and listed as an asterisk entry. The packaging reference remains unchanged and is the same for both classes.

Hydrochloric and Hydrofluoric Acids. In the notice it was proposed that the maximum quantity in one package of either of these acids when carried aboard passenger aircraft be limited to one quart. Experimental evaluation of corrosion rates of dilute solutions of these two acids made subsequent to the notice show corrosion rates of 0.02 to 0.035 inches per week with 7075–T–6 aluminum. Restricting the total amount of acid per package does not provide an adequate level of safety when the number of packages permitted aboard the aircraft is not limited in view of the high corrosion rates of these materials. Therefore the amendment prohibits the shipment of these two acids aboard passenger-carrying aircraft.

Hydrogen Peroxide. In high concentrations is a high energy monopropellant which can decompose with explosive violence under the right stimuli. Therefore this amendment, as did the proposal, does not permit exceptions for limited quantities of hydrogen peroxide in concentrations greater than 52 percent.

Mesityl Oxide. Data submitted by two commenters indicated no need to regulate this material as a poison B, therefore the requirement for a poison label has been deleted.

Monoethyl Amine. Due to its high volatility, low flashpoint and corrosive characteristics, exceptions for limited quantities are no longer permitted for this material.

Nitric Acid. There was some objection to the proposed reclassification of nitric acid as an oxidizer material, on the basis that it has always been classed as a corrosive material. It is believed that the Logan Airport crash, November 1973 (NTSB–AAR–74–16) fully demonstrates the oxidizing characteristics of nitric acid. In addition, future development of the regulations along more technical lines (rather than tradition) for such items as mixed loading charts and selection of cushioning and absorbent materials would best be served by identifying nitric acid in its more concentrated forms as an oxidizer. Since the Bureau has no data indicating at what concentration the oxidization characteristics of this material is significant, it has relied on a technical bulletin (MCA Chemical Safety Data Sheet SD–5), which lists 52 percent HNO_3 as the most dilute commercial grade and the current packaging requirements recognize 40 percent HNO_3 as a suitable breakpoint. Concentrations greater than 40 percent are therefore classed as oxidizer and concentrations 40 percent or less are classed as corrosive. This breakpoint will be re-evaluated

when a quantitative definition of an oxidizer is developed.

Nitro-Carbo-Nitrate. A comment requested that a new hazard class "Blasting Agents" be added for this and similar materials. The Bureau believes that this is outside the scope of this rulemaking and will defer consideration of the request to a later date.

Nitro Aniline. The Bureau believes that a movement toward technically correct chemical names with indexing based more on family names or structure rather than alphabetically using prefixes such as, mono, ortho, para, etc., is desirable. The shipping requirements for ortho and para nitroaniline are the same, and there is no apparent basis for distinguishing between these two isomers. The main entry has therefore been changed to "nitroaniline" with alternate shipping names of Orthonitroaniline and paranitroaniline. It is anticipated that the alternate shipping names will eventually be deleted. A similar fate may be anticipated for similar entries. Deletion of the mono prefix is also anticipated at some future date.

Organic Peroxides. In the notice is was proposed to regulate all organic peroxides by name and permit no n.o.s. entries for this class. Packaging requirements were not included in the notice as they were not available at that time, and have not yet been obtained. Therefore, all new entries for organic peroxides have been deleted, except for those published in the HM–112 notice published on April 24, 1974 and the organic peroxides currently listed in the regulations (including n.o.s. entries) have been returned to the hazardous materials table § 172.101.

Organic Phosphate and Organic Phosphorus Compounds. This amendment adds a new entry in a hazardous materials table for organic phosphorus compounds. Though not proposed, this addition became necessary when it was brought to our attention that based on the chemical structure of the compound molecule, such materials as Phorate and Thimet are not technically organic phosphates. These materials have been traditionally treated, regulated, described and shipped as organic phosphates by the majority of the shippers who recognize the extreme hazard involved with these materials and the fact that the emergency response is similar or the same as that for organic phosphates. However, recent incidents occurring with this material in transportation demonstrate that some less knowledgeable shippers have been describing this material as poisonous liquid or solid n.o.s. with the corresponding lesser packaging requirements. The Bureau believes that it was the intention of the regulations to include these compounds as organic phosphates. However, since there seems to be some uncertainty as the accuracy of this description, the hazardous material table is being modified to accurately describe and specify the requirements for shipment of organic phosphorus compounds and mixtures.

Vinyl Ethyl Ether. As proposed, this amendment no longer permits exceptions for limited quantities of this material due to its high volatility, low flashpoint, and anesthetic properties.

Zirconium Picramate. Wet with at least 20 percent water had been listed as an oxidizing material with corresponding section references. This amendment changes the class of this material to flammable solid. The Bureau believes this more accurately reflects the hazard presented by the material and is more appropriate for mixed loading compatability considerations. However, no change has been made in the packaging requirements or quantity limitation with respect to this material.

172.101 Column 3. *Hazard Class.* In the transfer of a commodity from one class to another, objection was taken to the use of packaging references in the former class. It is felt that if suitable packaging is referenced that there is no need to change it. Recodification of these regulations in the near future will place the packaging references within the part or subpart assigned that class.

Subdivision of Compressed Gases. Objection was taken to the proposed subdivision of compressed gases into either flammable or nonflammable gases. The proposed deletion of the poison gas class was considered a major error. The identification of compressed gases with poison as an auxiliary hazard and use of the standard poison label was also found objectionable. These objections were partially responsible for the return, in this amendment, to the currently recognized Poison A and Poison B designations and identification system.

Those materials currently identified as poison A materials have been identified in the table as Poison A and are required to carry a Poison Gas label and placard. Other gases that have a lesser poison hazard but which are still considered poison, according to the definition of Poison B, are required to carry the poison label in addition to the flammable or nonflammable gas label unless specifically stated otherwise for a specific gas (see fluorine). When a more quantitative definition of oxidizer material is available, it is possible that some additional changes will be made in the hazard class of certain materials.

Poisonous or Toxic Materials. A number of comments were received concerning the uncertainty between extremely and highly toxic definitions as well as the confusion over the differences between irritants and ORM–A materials. It was suggested that a return to the old nomenclature as something that was currently understood would be appropriate. It was also pointed out that the hazard class and the wording on the label and placard were different. Recently there has been considerable discussion with OSHA and the Consumer Product Safety Commission over the criteria for evaluating the poison hazard of a material. Although the proposed definition was derived after considerable discussions with the National Academy of Sciences and HEW several years ago, the current thinking is toward somewhat modified versions of these definitions. International discussions on this subject (UN and IMCO) have also indicated some need to modify the proposed definitions. It was therefore decided to return to the current definitions of Poison A and Poison B, and Irritant, and leave the definition of ORM–A essentially the same as that of ORA–A as defined by IATA. A notice will be prepared on this subject for public comment as soon as possible. New names for these hazard classes will also be considered at that time. Any material currently listed as Poison A is again listed as Poison A in the Hazardous Materials Table and any material proposed in HM–112 as Extremely Toxic has been restored to its previous classification.

ORM Entries for Other Regulated Materials, Group A; Other Regulated Materials, Group B; Other Regulated Materials, Group C; and Other Regulated Materials, Group D have been deleted from the table and replaced with the simply entry, ORM–A, ORM–B, ORM–C and ORM–D. The quantitative definition of ORM–A has been deleted and will be reconsidered concurrently with the notice on the poison materials definition to be prepared as soon as possible. The definition of ORM–A becomes essentially the same as the definition used by IATA for ORA–A. ORM–D has been limited to consumer commodities in this amendment. However, the ORM–D class may be expanded in the future to include such things as diagnostic materials, chemical kits used for routine chemical analysis, etc.

Assignment of HI Numbers. A number of comments were submitted concerning the assignment of HI numbers to specific commodities. Because the proposal on the HI System has been terminated (see 40 FR 26687, June 21, 1975), these comments are not being addressed in this rulemaking. However, it should be noted that any data submitted has been filed as part of the background data on the appropriate commodity. The number of submissions of actual data was very few. Most comments consisted of qualitative expressions such as "* * * based on our experience of many years in handling this material we believe that the HI number should be 30 rather than 31." Such information is of little value in a data file.

Heat of Dilution Factor. Identification of this potential hazard has been deleted from the hazardous materials data or characterization requirements because of the withdrawal of the Hazard Information System (see 40 FR 26687, June 25, 1975). Thus comments directed toward this factor are no longer pertinent.

172.101 Column 4. *Label(s) Required.* With reversion to the previous Poison A and Poison B classes, the use of the Poison Gas label is also required and changes have been made in this column to reflect the changes required for this revision. The requirement for all poisons (Poison A and B) to bear the poison label may require double labeling where a hazard with a higher ranking order

exists, and thus the requirement for a poison label has been added where current data indicate the material meets the Poison B definition. Compressed gases not currently designated as Poison A materials but which meet the inhalation criteria of a Poison B are required to bear the Poison label in addition to the flammable gas, nonflammable gas or oxidizer label. Phosphorus pentasulfide and sesquisulfide were proposed in the notice as requiring a Flammable Solid, Dangerous When Wet and Poison label. Objection was taken to the use of three labels. The proposed requirement for the poison label has not been adopted based on the description of a "Dangerous When Wet" material as one which when in contact with water liberates a flammable or poison gas in dangerous quantities. Because the Dangerous When Wet label implies a potential poison hazard on exposure of the material to water, the proposed additional requirement for a Poison label is considered unnecessary.

Column 5. *Exceptions.* The Transportation Safety Act of 1974 (Pub. L. 93–633) defines exemptions in the same manner that we have defined special permits for many years. Therefore the word "exemptions" as it has been used in all previous regulations must be replaced with some alternate wording in order that these two types of relief from the regulations are not confused. The word chosen for use in this table is "exceptions". What formerly were referred to as exempt quantities are now identified as "Limited Quantities", in the specific sections referenced in the Hazardous Materials Table.

In the notice of proposed rulemaking it was proposed that exceptions (exemptions) for limited quantities be deleted for a number of commodities that were listed by name in the regulations. These exceptions are being removed on the basis of flash point, boiling point, stability, and narcotic or anesthetic effects.

Also, exceptions should apply only to those items specifically identified as safe in limited quantities, and should not apply to n.o.s. entries or general descriptions of materials such as "Compound, cleaning * * *." The Bureau intends to continue the evaluation of exceptions for all hazardous materials as soon as possible.

Column 6. Packaging Requirements have been separated from exceptions for limited quantities. It is believed that this makes the section references more meaningful.

Column 7. Maximum quantity in one package aboard aircraft. There were a number of objections to the reduction of combustible liquids aboard aircraft from 55 gallons to 15 gallons. In view of the lack of general restrictions applied to combustible liquids, (except for bulk shipments), any restriction as to maximum quantity of combustible liquids on aircraft, unless specifically designated in § 172.101, has been deleted. Rail express has been deleted from this table as obsolete since rail express no longer exists.

Column 8. Water shipments. Some objection was taken to the loss of additional descriptions of hazardous materials that currently appear in 46 CFR. The Bureau felt that the space required for these descriptions was not justified. These descriptions will be maintained as part of the background files by the Department. It is recommended that those individuals currently holding copies of 46 CFR keep them for future reference to identify more specifically such items as "garbage tankage."

172.200 (§ 173.427(a)) Sets forth the applicability of Subpart C. Several commenters recommended the use of a separate shipping document for listing hazardous materials. Consequently, a Notice of Public Hearing was published in the FEDERAL REGISTER in Volume 39, No. 238, December 10, 1974, Docket No. HM–103; Notice 73–10A for comment on a proposed Hazardous Materials Manifest as a replacement for the shipping paper. Several commenters at the hearing on February 11, 1975, presented objections to the increased cost of preparing a separate Hazardous Materials Manifest, and presented several ways in which the shipping paper could be prepared mechanically to meet the requirements. The Bureau agrees with these comments and has not adopted the proposal to require a Hazardous Materials Manifest.

172.201(a)(1) (HM–103, § 172.201) Prescribes the procedure for listing hazardous materials on a shipping paper when materials not classed as hazardous are also listed. Based on the comments received and the presentations at the February 11, 1975 hearing, the Bureau reconsidered the proposed requirement and provided for alternate methods of listing the hazardous materials; either list the hazardous materials first, or highlight hazardous materials entries by entering them in a color which contrasts with all other entries on the shipping paper, or place an "X" in a column with a colored border placed before the proper shipping name. The Bureau believes this will permit expeditious location of hazardous materials entries and still permit sequential listings for planned load discharging. The basis for this requirement was discussed extensively in the notice and in an advance notice of proposed rulemaking published on June 27, 1972 (37 FR 12660).

172.201(a)(2) (HM–103, § 172.201) Provides for shipping paper entries to be legible and to be printed (manually or mechanically) in English. Several commenters suggested that the requirement not exclude manually printed entries. The Bureau agrees and has made such provisions.

172.201(a)(3) (HM–103, § 172.201) Provides for shipping paper entries to contain no codes or abbreviations. Several commenters suggested that codes improve shipping paper entries. The Bureau does not agree. In accidents involving hazardous materials in transportation, emergency response personnel must be able to readily identify the hazards involved and at times no means other than the shipping paper is available. The Department has many examples of unreadable codes on shipping papers and examples where the reverse side of a shipping paper which contained the code explanation was not reproduced.

172.201(a)(4) (§ 173.427(a); HM–103, § 172.201(b)) Permits inclusion on the shipping paper of additional information concerning the material provided the information is not inconsistent with the required description. Several commenters recommended deleting the word "shipping" following the word "additional" in the notice. The Bureau agrees and provides accordingly.

172.202 (§ 173.427(a); HM–103, § 172.202) Provides for the required description of hazardous materials on the shipping paper. Changes to the existing rule are minor in that the classification is not required for an n.o.s. entry when, except for the authorized abbreviation "n.o.s." the proper shipping name and the classification are identical. Also, the sequence of the entries for a proper shipping name and classification is prescribed thereby precluding use of code references or split entries. Several commenters recommended that the requirements in the notice pertaining to the size of the print in the classification be deleted as being too restrictive; others recommended the word "immediately" in § 172.202(c) of the notice be deleted as being too restrictive. The Bureau agrees to these requested deletions and these amendments reflect that agreement.

172.203 (§ 173.427; HM–103, § 172.203) Sets forth requirements for shipping paper entries in addition to those required in § 172.202.

172.203(a) (§ 171.6(a)(2); HM–103, § 172.203(a)) Provides for identifying on the shipping paper a shipment made under a DOT exemption by entry of the exemption number in association with the proper shipping name and classification. No substantive change.

172.203(b) Provides for identifying a "Limited Quantities" shipment on the shipping paper. This was not in the notice, however, the Bureau considers it to be a minor requirement, yet one that is needed to identify shipments of hazardous materials that present a limited hazard in transportation because of the "form" or "quantity" in which they are packaged. Because of the limited hazard, the Bureau has excepted these materials from specification packaging and labeling requirements except when offered for transportation by air. Also, the proposal would have required the shipping paper to contain the entry "No label required" under certain conditions. The use of the term "limited quantities" replaces the requirement for the shipping paper entry "No label required" which has been misleading in the past so far as air transportation is concerned.

172.203(c) (§ 173.427(a)(1); HM–103, § 172.203(g)) Prescribes the "Blasting caps" entry on the shipping paper. No substantive change.

172.203(d) Provides for identifying on the shipping paper the placarding exception for corrosive materials that are not corrosive to skin.

172.203(e) (HM–103, § 172.203(j)) Provides for the required entry of the word "EMPTY" on the shipping paper for certain packagings and permits the optional entry of the word "EMPTY" for other packagings. Several commenters recommended this optional entry be deleted or be changed to read "EMPTY—Last Contained—". The Bureau agrees that the suggested wording is appropriate and permits its use as an alternate to the word "EMPTY".

172.203(f) (FAR § 103.3; HM–103, § 172.203(c)) Prescribes the "Cargo-only Aircraft" entry for air shipments not authorized aboard passenger-carrying aircraft. No substantive change.

172.203(g) (§ 174.584; HM–103, § 172.203(d)) Prescribes additional shipping paper entries applicable to rail shipments.

172.203(g) (1) and (2) (§ 174.584; HM–103, § 172.203(d)) Provides for entering the placard notation and endorsement on the shipping paper. Several commenters suggested that the placard notation requirements be deleted as being redundant and unnecessary. The Bureau believes that this notation must be retained to permit carrier personnel to replace missing or destroyed placards to enhance safety in transportation. No substantive change.

172.203(g)(3) (§ 174.584(g)) Provides for the entry "EMPTY" on shipping papers for certain rail shipments. No substantive change.

172.203(g)(4) (§§ 171.11, 173.5; HM–123) Provides for a handling precaution entry on the shipping paper for DOT 112(a) and 114A tank cars without head shields that contain a flammable compressed gas. This was not in the notice; however, the Bureau believes this to be the appropriate action to incorporate the provisions of FRA E.O. No. 5 into the shipper part of the regulations as recommended in a petition for reconsideration to regulations adopted under Docket HM–123 (39 FR 43310).

172.203(h) (§ 173.427 and HM–113) Provides for additional shipping paper entries for certain shipments by highway in Specification MC 330 and MC 331 cargo tanks. No substantive change.

172.203(h)(1) (§ 173.427(a)(3) and HM–113) Provides for an additional shipping paper entry for anhydrous ammonia in Specification MC 330 and MC 331 cargo tanks consistent with new requirements adopted under HM–113 (40 FR 24902).

172.203(h)(2) (§ 173.427(a)(4); HM–103, § 172.203(i)) Provides for an additional shipping paper entry for liquefied petroleum gas in Specification MC 330 and MC 331 cargo tanks. No substantive change.

172.203(i)(1) (46 CFR §§ 146.05–12(f), 146.05–13(e) and 146.06–20; HM–103, § 172.202(a)(4)) The Bureau has added in this section certain additional shipping paper requirements for domestic and export shipments by water consistent with presently prescribed requirements in the 46 CFR references.

172.203(i)(2) (46 CFR § 146.05–12(f)(5); HM–103, § 172.203(e)) Provides for adding the technical name to the shipping paper for export water shipments of certain materials described by an n.o.s. entry in § 172.101 as previously required in § 146.05–12. To insure uniformity of shipping paper requirements for export shipments, the words "chemical name" have been changed to "technical name".

172.203(j) (§ 173.427(a)(5); HM–103, § 172.203(k)) Prescribes additional shipping paper entries for shipments of radioactive materials. The more significant changes from the existing rule are the requirements for identifying the transport index for each package bearing RADIOACTIVE YELLOW-II or RADIOACTIVE YELLOW-III labels; for identifying the fissile class or stating "Fissile Exempt" as appropriate, and the authorization for the use of packagings approved by the U.S. Nuclear Regulatory Commission or the Energy Research and Development Administration and under certain conditions, by the applicable International Atomic Energy Agency Certificate of Competent Authority.

172.204(a) (§ 173.430; HM–103, § 172.204(d)(2)) Provides for manual or mechanical signing of the certification. Not a new requirement, but a clarification of the method of signing. No substantive change.

172.204(b) (§ 173.430(c); HM–103, § 172.204(a)) Provides for certification exceptions for shipments by highway in a cargo tank supplied by the carrier, and by highway during transportation by a private carrier. One commenter recommended paragraph (b)(2) of § 172.204 be reworded for clarity. The Bureau agrees and has reworded the paragraph essentially as it was in 49 CFR, 173.430(c).

172.204(c) (§ 173.430(b); FAR 103.3(e); HM–103, § 172.204; HM–112, § 175.30)) Provides for certification for shipments by air. One significant change from the existing rule pertains to the requirements for two copies of the certification, and another pertains to air shipment of radioactive materials as mandated by § 108 of the Hazardous Materials Transportation Act (Title I of Pub. L. 93–633, January 3, 1975).

172.204(c)(1) (HM–103, 172.204(c)) Provides for alternative wording of the certification for hazardous materials shipped by air including a portion of the IATA certificate. This exact language was not in the notice since IATA has since revised the language of its certificate. While certain portions of the IATA certificate have not been included as part of the alternate certificate, the Bureau believes the objectives of the certification requirement will be achieved through use of the portions adopted.

172.204(c)(2) (14 CFR 103.3(b); HM–112, § 175.30) Prescribes the requirement for executing in duplicate the certification for air shipments consistent with existing requirements.

172.204(c)(3) (HM–103, § 172.204(b)(1)) Provides for additional certification for shipments by passenger and cargo-only aircraft. Existing § 173.430(b)(1) required this added certification for passenger aircraft only. One commenter recommended the proposed paragraph be reworded for clarity because the phrase "permitted hazardous material" was confusing. The Bureau agrees and has reworded the paragraph accordingly.

172.204(c)(4) (FAR § 103.3(e); Pub. L. 93–633) Provides for additional certification for radioactive materials authorized aboard passenger-carrying aircraft. This provision was not in the notice, but published as a regulation in the FAR reference on April 17, 1975, to become effective on May 3, 1975, in accordance with the mandate of § 108 of the Hazardous Materials Transportation Act (Title I of Pub. L. 93–633, January 3, 1975).

172.204(d) (§ 173.430(a); HM–103, § 172.204(d)) Specifies who may sign a certification and how the signature may be accomplished. Significant changes from the existing rule provide for the signature to be legible and accomplished manually or mechanically by a "principal, officer, partner, or employee of the shipper or his agent."

172.300 (§ 172.401; HM–103, §§ 172.300, 172.302(a)(1)) Sets forth general requirement for the marking of shipping names on packages. Several commenters recommended that "cylinders" be added to this section. A cylinder is a packaging and need not be individually identified.

172.302 (46 CFR, § 146.05–15(e)(1); HM–103, § 172.302(f)) Provides for marking export water shipments of a material described by an "n.o.s." entry in § 172.101. Several commenters recommended that this requirement be deleted since the Hazard Information (HI) number and package label would provide adequate hazard identification. The proposal concerning HI numbers was withdrawn (see 40 FR 26687, June 25, 1975), and the Bureau believes that the marking requirement from the 46 CFR reference must be retained to enhance safety in transportation in export water shipments,. In response to comments, this amendment limits the requirement for marking the technical names of components of mixtures to the "technical name of the hazardous materials giving the mixture its hazardous properties."

172.304 (§ 173.401(a)(1); HM–103, § 172.302(d) and § 172.305(f); HM–101, § 173.31(a)(6)) Prescribes general marking requirements. Significant changes from the existing rule are that the prescribed marking must be durable, in English, and that it may not be near any other marking (such as advertising) that could substantially reduce its effectiveness. A commenter requested clarification on whether a product label was considered to be a "marking or advertisement". It is the Bureau's position that a product label that contains precautionary information consistent with the

intent of the DOT regulations would not be precluded by this restriction.

172.306 (§§ 173.401(b) and 177.816; HM–103, § 172.302(e)) Provides for marking the name and address of the consignee on the package and specifies the exceptions to this requirement. One commenter recommended that the exceptions be extended to packages in a freight container. The Bureau agrees, has made such provisions, and has added a clarification of the intent of the provision as pertaining to "carload lot", "truckload lot" and "freight container load".

172.308 (§ 173.400(a); HM–103, § 172.302(c)) Provides for the use of certain abbreviations in markings. No substantive change.

172.310 (HM–111, § 173.401(f)) Provides for additional markings for packages containing radioactive materials. This requirement proposed under Docket HM–111, was published after notice and published comment on December 31, 1974, and became effective on March 31, 1975 (39 FR 45238).

172.312 (§ 173.401(c); HM–103, § 172.302(h)) Provides for markings on certain packages containing liquid hazardous material to indicate the orientation of the inside packaging. One commenter recommended that specification containers 6D, 21P, 37M and 27P containing liquid hazardous materials be excepted from the "This Side Up" marking requirement because the intent of the package orientation marking is to identify the top of a package that has been overpacked. The Bureau agrees and has provided for this exception. This section also provides for the use of arrows to augment the required package orientation marking. This was not in the notice, however, it was recommended by a commenter and the Bureau believes the use of arrows will contribute to safety. To prevent confusion and make the use of arrows effective, this amendment provides that arrows on packages containing hazardous material may not be used for purposes other than to indicate the correct package orientation.

172.316 (HM–103, § 172.302) Provides for marking an outside packaging containing a material classed as ORM by identifying the ORM immediately following or below the proper shipping name. Those classed as ORM–A and C must be marked ORM–A and ORM–C, as appropriate. Those classed as ORM–B must be marked ORM–B unless corrosive only to aluminum when wet, and then must be marked ORM–B—KEEP DRY to indicate the precautions needed to prevent corrosive action. Since ORM–D materials essentially are consumer commodities packaged in limited quantities, the Bureau believes that, as recommended by several commenters, the marking of the proper shipping name and the appropriate ORM are adequate except that those ORM–D packages intended or offered for transportation by air must be marked ORM–D–AIR to indicate they meet the requirements of § 173.6. Although not contained in the notice, this amendment provides for attaching the marking to an ORM package with a tag when circumstances prevent the application of the marking to the package surface.

Also, the Bureau has added a provision authorizing the marking on a package containing a material classed as ORM to be accepted in lieu of the certification required on shipping papers in those instances wherein shipping papers are not required. This was not proposed in the notice, but the Bureau believes this will accomplish the requirements to enhance safety without requiring additional paperwork.

172.326 (§ 173.401(a)(1); HM–103, § 172.305(f)) Provides for marking the proper shipping name on the head and one side of each portable tank when appropriate or on two opposing sides. The Bureau agrees with commenters who recommended one marking be placed on an "operating side" of a portable tank, and has made such provision. Based on one commenter's recommendation, the Bureau reconsidered the proposed definition of portable tanks and has excluded multi-unit-tank-car-tanks. The most significant change from existing rules is the requirement that the marked name of contents on each portable tank must properly identify the actual hazardous material the portable tank contains.

172.328 (§ 177.823(b); HM–103, § 172.308) Provides for markings on cargo tanks. The most significant change from existing rules is that for gases, the marking must be the proper shipping name or an appropriate common name.

172.330 (HM–101, § 173.31(a)(6); HM–103, § 172.310) Provides for markings on tank cars including the marking visibility and the location of the marking on both sides of the tank car near the stencilled DOT specification marking. Also requires that markings indicate the actual hazardous material the tank car contains. The most significant changes from existing rules are the provisions indicated above and the fact that tank car marking requirements are implemented by references in Part 173 of the regulations as originally proposed under Docket HM–101 (37 FR 7104).

172.400 (§ 172.402(b); HM–103, §§ 172.400(a) and 172.402) Provides for general labeling requirements, and exceptions thereto. The most significant changes to existing requirements are: (a) The establishment of a maximum size for freight containers wherein labels are required instead of placards; (b) the exclusion of packages containing materials classed as ORM from labeling; and (c) modification of the labeling prohibition in existing § 173.404(b).

In accordance with the CGA (Compressed Gas Association) proposal in response to the notice, the Bureau has adopted in this section a change to CGA Pamphlet C–7, Appendix A ("A Guide for the Preparation of Precautionary Markings for Compressed Gas Containers") which will identify one additional hazard when appropriate for a nonflammable or a flammable compressed gas. Adoption of the amended standard was proposed in Notice 73–10A (39 FR 43091). The standard has since been revised to remove references to hazard information numbers. Commenters recommended that a hazardous material classed as a "Poisonous compressed gas" be authorized under the provisions of the CGA Pamphlet C–7, Appendix A. This recommendation is not adopted because the Bureau believes that materials classed as Poison A must be labeled because of the special requirements applicable to them. Other comments recommended that packages in freight containers and palletized loads be excepted from labeling requirements. The Bureau believes that the hazards must be identified for proper handling and as an assistance to emergency response personnel during incidents involving hazardous materials in transportation. This was discussed in the preamble to Docket No. HM–28 (Removal of Label Exemptions) and the following language from the preamble is considered appropriate: "In the common carrier sector, even when truckload lots are involved, it is essential that a uniform and consistent labeling system be maintained in order to assure its maximum effectiveness. Also, there are occurrences which necessitate the 'breaking up' of truckload lots even though not intended at the time of shipment." (See 36 FR 9068, May 19, 1971.) The Bureau believes the same thinking applies to palletized loads and freight containers.

172.401 (§§ 173.404 and 173.86; HM–103, § 172.401) Specifies labeling that is prohibited by the regulations in this subchapter and provides for the use of certain labeling on packages in import and export shipments. The Bureau agrees with the commenters who recommended that proposed § 172.401(a) be clarified to permit the shipment of packages of hazardous and nonregulated materials (unless otherwise prohibited) in the same outside packaging, and has reworded the paragraph accordingly. Several commenters discussed the problem a carrier could encounter in determining whether or not a labeled package offered for transportation contained regulated material for which the label was appropriate. The intent of the regulation is to prevent a carrier from "knowingly" accepting for transportation an improperly labeled package. The carrier is not expected to open a package to inspect its contents. The certification of the shipper is to be accepted unless inspection or other information leads the carrier to believe the labeling may be in error. The Bureau agrees with the commenters who recommended that proposed § 172.401 be reworded to better identify the exceptions therein and has rewritten the section accordingly. The most significant change from existing rules is the labeling exception for a package containing a sample of a material being shipped to a laboratory for testing to determine its hazard characteristics.

172.402 (§§ 173.402 and 173.388; HM–103, § 172.402) Provides additional la-

beling requirements for specific materials including those offered for air transport authorized only on cargo aircraft. The most significant new requirements apply to the labeling of a material meeting the definitions of more than one class, one of which is Poison B, and the labeling of packages containing samples for laboratory examination. The multiple labeling is adopted as proposed in the notice.

The Bureau agrees with the commenter's recommendation that specific requirements be placed in this section for the CARGO AIRCRAFT ONLY and MAGNETIZED MATERIAL labels that have been used in the past, but not required by 49 CFR. Several commenters recommended deletion of the requirement for multiple labeling which they considered unnecessary with the use of the Hazard Information (HI) numbers to identify additional hazards. Since the HI numbers have been withdrawn from the HM-103 proposal, the Bureau believes it is essential to use labels to identify certain significant hazards in transportation. Because of the significance of the potential hazard in transporting poisons with foodstuffs, the Bureau believes that a poison that is an additional hazard must be identified, and has made such provisions based on a commenter's recommendations. One commenter recommended that provisions be made to cover the possibility of a shipper accidentally "overlabeling" a sample being sent to a laboratory for classification. This amendment makes such provisions because the Bureau believes that when a material must be sent to a laboratory for classification the shipper must classify it to the best of his ability based on the defining criteria in this subchapter, the hazard precedence specified in § 173.2 of this subchapter, and his knowledge of the material. It then must be properly packaged, marked, and labeled as required for the hazards determined by the shipper. Subsequent laboratory tests of the sample may or may not be in agreement with the shipper's initial determination of hazard classification.

172.403 (§§ 173.399, 173.402(a)(10); HM-111, § 173.416; HM-103, § 172.403) Prescribes specific labeling requirements for radioactive materials. One commenter mistakenly interpreted the language in this section and confused RADIOACTIVE YELLOW-II with Fissile Class II Category. No substantive change.

172.404 (§ 173.403; HM-103, § 172.404) Provides for label requirements on mixed packing. The Bureau agrees with commenters' recommendations and has inserted the word "hazardous" to indicate the intent of the regulation that the labeling on the outside packaging must identify the hazards contained therein. Also, the Bureau substituted the term "outside container" for "outside packaging" for consistency with the definitions. The wording of this section was changed by the Bureau from that in the notice to allow for the withdrawal of the Hazard Information numbers and to be more specific in identifying the pertinent references in Part 173.

173.405 Provides for permissive substitution for the word "OXYGEN" for "OXIDIZER" on the label for oxygen.

173.406 (§ 173.404(a), § 173.402(a); HM-103, § 172.405) Provides for the label placement requirements on packages and for exceptions thereto. The more significant changes to existing rules are: (a) The requirement to place the label near the marked name of contents; (b) the optional use of a tag under certain conditions to attach labels; (c) the requirement to place multiple labels next to each other; (d) the requirement for placing at least two labels on certain packages; and (e) the requirement under certain conditions for placing labels on a contrasting color background or having an outer border line on the label.

Several commenters recommended this section be rewritten for clarity particularly concerning (a) the use of a tag on a cylinder; (b) the dotted line border on labels; and (c) affixing labels near the closure on a freight container. The Bureau has rewritten the section accordingly and based on commenter's recommendations the Bureau added provisions for (a) attaching a label by means of a tag to a package having an irregular surface to which a label will not adhere; (b) optional placement of a solid or dotted line outer border on a label; and (c) placement of two of the required labels on packages of radioactive materials. The latter requirement was inadvertently omitted from the notice, however, it requires no more than that already required by existing § 173.402(a)(10).

One commenter suggested that the use of only one label on a package would be less confusing to emergency services personnel. The Bureau believes that for certain significant hazards, two labels identifying those hazards are required so that personnel encountering a spill or fire involving such material will have a better opportunity to make an informed judgment as to actions required.

172.407 (§ 173.404; HM-103, § 172.411 through § 172.450) Prescribes the label specifications. These basically are the labels prescribed in existing § 173.405 through § 173.422 of 49 CFR, and the MAGNETIZED MATERIAL and CARGO AIRCRAFT ONLY labels which are presently used for air shipments. The most significant change from the existing specifications is that the required color for each label must be within the prescribed color tolerances as was proposed in the notice. The Bureau does not agree with the commenter's recommendation that the label color specifications not be mandatory. Part of the hazard identification and communication system is the label color. The color is particularly significant for those who cannot read, and the proper differentiation between colors is significant to those persons that are partially color blind.

A maximum tolerance for each color is allowed while color separation is maintained. This will permit easier compliance while preventing confusion of colors such as red and orange, yellow and orange, and blue and green. Several label manufacturers have forwarded label samples to the Bureau for examination for compliance with requirements as to size, format, and color. The majority of those submitted met the specifications and were within color tolerances. One printing ink manufacturer stated that it was part of his service, at no cost to the customer, to mix the inks to meet the color standard established by the customer.

Several commenters recommended tags be permitted to attaching labels to cylinders. This amendment adopts that recommendation. The Bureau agrees with a commenter's recommendation that the outer border of a label be a solid line or a dotted line when an outer border is required, and has made such provisions in § 172.406(d).

172.411 through 172.450 (§ 173.405 through § 173.422 and § 172.119(i); HM-103, § 172.411 through § 172.450) Specifies the use of sixteen labels and references the requirements for additional labels such as the bung label. The most significant additions to the existing labeling requirements are the MAGNETIZED MATERIAL and CARGO AIRCRAFT ONLY labels. These labels which are adopted by DOT are presently used for air shipments but were not contained in 49 CFR. The EMPTY label specification was not in the notice, but was in existing § 173.420 and the Bureau placed it in this amendment to continue its use as has been provided for in existing § 173.29. The specifications pertaining to the minimum size, shape, content, design, and color of each label remains as presently required in 49 CFR.

172.500(a) (§§ 177.823(a), 174.547; HM-103, § 172.500(a)) Sets forth the applicability of Subpart F which pertains to the placarding of motor vehicles, rail cars, portable tanks and freight containers.

172.500(b) (HM-103, § 172.500(b)) Sets forth exceptions to the placarding requirements, namely, that the provisions of Subpart F do not apply to materials classed as etiologic agents or as ORM-A, B, C, or D.

172.502(a) (§§ 177.823(b)(1), 177.823(d); HM-103, § 172.501(a)) Provides that placards may not be displayed for commodities that are not classified as hazardous materials, and that placards which are incorrect for a material may not be displayed. By this amendment placards may now be displayed on a transport vehicle or freight container that contains quantities of hazardous materials excepted from placarding requirements if the placards properly represent the hazardous material contained therein.

172.502(b) (§ 174.546(d); HM-103, § 172.501(a)(2)) Provides that signs or other devices which may be confused with placards specified in this subpart may not be affixed to or displaced on transport vehicles, portable tanks, or freight containers.

172.504(a) (§§ 177.823(a)(1), 174.540 through 174.542; HM-103, § 172.502(a)) Sets forth the required placards for classes of hazardous materials and cer-

tain materials by name. Many commenters objected to the complexity of the Hazard Information System proposed in Docket HM–103 and the resultant placarding system which they felt to be so complex as to be unworkable, and confusing to the extent that it would be a detriment to safety. Because the proposal with regard to the Hazard Information System has been withdrawn (see 40 FR 26687, June 25, 1975), this amendment adopts a placarding system without numerical hazard identifiers.

172.504(a) (§ 174.540 to § 174.552, § 177.823(a); HM–103, § 172.502(a) and Table (1)) Tables (1) and (2) specify the placarding required for motor vehicles and rail cars carrying any quantity of certain hazardous materials, including multiple placards for certain radioactive materials. The notes to Table (2) provide, among other things, for alternate placards, under certain conditions, for combustible liquids and flammable solids and the permissive use of the OXYGEN placard. Significant changes from existing rules are the requirements for placarding any quantity of a flammable solid requiring the DANGEROUS WHEN WET label, multiple placards for certain radioactive materials, and for placement of the rail POISON GAS and EXPLOSIVES A placards on a white background.

172.504(b) (HM–103, § 172.502(b)) Provides for the use of the DANGEROUS placard when no more than an aggregate gross weight of 5,000 pounds of one class of material is loaded at one loading facility into a freight container or transport vehicle. The basis for this new requirement is to more specifically identify the potential hazards of materials in mixed loads when more than a specified volume is loaded at one point, while taking into account the potential for confusion should such a requirement be imposed on all LTL pickups and deliveries.

172.504(c) (§ 177.823; HM–103, § 172.502(b)) Provides for a placarding exception in highway transportation and in TOFC or COFC rail service when motor vehicles and freight containers contain less than 1,000 pounds aggregate gross weight of certain materials covered by Table (2).

172.506 (§ 177.823(a); HM–103, § 172.503(a)) Prescribes the responsibility for the placarding of motor vehicles. Many commenters objected to the proposal in Docket HM–103 which requires the person offering the hazardous material to give to the highway carrier the placards required for the material, or to affix such placards if a representative of the highway carrier was not present. Many commenters stated that this requirement would be unworkable in actual practice and presented problems as to responsibility for correct placards, especially with mixed loads. The Bureau agrees and has changed the regulation to require the person who offers the material to give the required placards to the highway carrier and assigns to the highway carrier the responsibility to affix the correct placards. The requirement for the shipper to give a motor carrier the proper placards for the material he offers for transportation is a significant change from existing rules. Motor carriers will continue to be responsible for any placarding required by the aggregation of shipments at their terminals, or different pickup or delivery points. However, the regulation provides an exception if the carrier's vehicle is equipped with the required placards and they are displayed at the time the material is offered for transportation.

172.508 (§§ 174.548 and 174.549; HM–103, § 172.503(b)) Requires the shipper to affix the appropriate placards to each rail car containing the material he has offered for transportation.

172.510(a) (§ 174.540; HM–103, § 172.513(c) Prescribes a square background for the EXPLOSIVES A and POISON GAS rail placards. This allows for better identification of rail cars containing those materials which, by regulation, may not be uncoupled or cut off while in motion and which may not be struck by other cars or coupled with more force than needed to complete coupling.

172.510(b) (§ 173.119(h); HM–103, § 172.502(b)) Requires a DOME placard be affixed on domed tank cars transporting certain flammable liquids.

172.510(c) (§ 174.562; HM–103, § 172.527) Requires the display of EMPTY placards to communicate the potential hazards of so-called empty cars that have not been cleaned or purged or reloaded with a material not subject to the regulations.

172.510(d) (§ 174.579, § 173.426) Requires the FUMIGATION placard on each freight container and transport vehicle offered for rail transportation which contains lading that has been fumigated or treated with poisonous liquid, solid, or gas.

172.512 (§ 174.549, § 177.823; HM–103, § 172.504) Provides for placarding freight containers, including a provision for placarding freight containers having a capacity of less than 640 cubic feet when offered for transportation by air. It takes into account intermodal movements, including those for which the 1,000 pound placarding exception does not apply.

172.514 (§§ 174.541 and 177.823; HM–103, § 172.505) Provides for placarding of cargo tanks and portable tanks. In addition, placarding is required on empty portable tanks having a capacity of 110 gallons or more and cargo tanks unless reloaded with materials not subject to the regulation or sufficiently cleaned of residue or purged of vapor to remove the potential hazard. Not included are so-called "ton tanks" meeting specifications 106 or 110 due to their design and the manner in which they are handled and loaded.

172.516 (§§ 177.823(a), 174.549; HM–103, § 172.508) Sets forth visibility requirements for placards on transport vehicles, portable tanks, and freight containers including horizontal display, and the maintenance of visibility and legibility of placards. Also sets forth methods of attachment of placards. Several commenters discussed possible difficulties that may be encountered in displaying placards under various conditions. In consideration of these comments, the Bureau has provided for the placards to be made of various types of materials and for alternate attachment methods provided the format, color and legibility of the placard is maintained.

172.519 through 172.558 (Part 174, Subpart C; § 177.823; HM–103, §§ 172.511 through 172.550) Sets forth the specifications for each placard. The significant changes to existing specification are: (a) the placards are the same for all modes of transportation; (b) all hazardous material placards have similar dimensions and general appearance; (c) all except the DANGEROUS placards basically are enlargements of the labels; and (d) in addition to the improved format, the OXYGEN, CHLORINE, FLAMMABLE SOLID and ORGANIC PEROXIDE placards are adopted to improve the identification and communication of the hazards of materials in transportation.

PART 173—SHIPPERS

173.1 Clarification, deleting unnecessary language.

173.2 Amended to include a priority listing of hazard classification to be followed in cases involving multiple hazards. As a result of several comments, explosives required to be classed by the Department of Defense have been excepted from the requirements of this section. The listing which appeared in Notice HM–112 has been modified to take into account the comments of several interested parties. It should be further pointed out that this priority listing is intended to direct the shipper's attention to such things as more restrictive packaging requirements and does not purport to classify materials on the basis of hazard potential of unpackaged material.

173.3 Amended to incorporate the provisions of former §§ 173.1, 173.3, 173.4, 173.5 and 173.6.

173.4 Deleted.

173.5 Deleted.

173.6 This section now sets forth the general requirements for shipment of hazardous materials by air. The requirements are deemed necessary to provide adequate safety in the transportation of hazardous materials by air. Many comments were received regarding the proposed provisions. Several comments objected to the 4-foot drop test contending that this did not represent actual transportation conditions. Since this is intended as a bench mark for the determination of packaging integrity, the Bureau does not consider these objections valid, and has retained this requirement. Several comments objected to the outage requirements for liquid containment on the grounds that packagings over 110 gallons capacity could perform satisfactorily with a less restrictive limitation. The Bureau recognizes the merit of these comments and has revised this provision accordingly. Other comments expressed concern that cylinders might not be considered as "packaging." In view of

the definition provided in § 171.8 for packaging, which includes cylinders as a type of container, this difficulty should not arise. Editorial changes throughout this section have been made in response to comments received.

173.7 Changed to reference the U.S. Energy Research and Development Administration.

173.9 Deleted as unnecessary; provisions incorporated in § 171.12.

173.10 Deleted as unnecessary in view of §§ 171.15 and 171.16.

173.18 Proposed § 173.18 has been deleted because in certain respects it is unnecessary and, in its entirety, could be considered in conflict with § 175.30(b) which requires that aircraft operators inspect packages containing hazardous materials.

173.21 Paragraph (a) has been amended for clarification, and paragraph (b) adds a requirement regarding the forwarding of Bureau of Explosives reports on cigarette lighters to the Department. A comment objected to the designation of the B of E as the examining laboratory. Lacking laboratory facilities, it is the Bureau's position that the Department must rely upon the recognized capabilities of the B of E. The use of other laboratories may be considered in future rule-making actions.

173.22, 173.23 and 173.24 No substantive changes.

173.25 Clarifies the intent of orientation markings, "THIS SIDE UP" or "THIS END UP" to indicate position of closures of inside packages.

173.26 No substantive change. Deletes reference to rail express.

173.27 Pertaining to containers, the limitations on the maximum quantities of hazardous materials permitted in packages offered for transportation by aircraft must conform with the provisions of § 172.101 of this subchapter. Incorporates provisions of 14 CFR.

173.28 Paragraph (n) has been redesignated paragraph (o). A new paragraph (n) has been added to provide for reuse of single-trip packaging for ORM materials and other materials not subject to specification packaging requirements.

173.29 Many comments objected to the revisions proposed in the Notice HM-112 pertaining to shipment of empty packagings having a capacity of 110 gallons or less. The Bureau recognizes the impact which might result from such revisions. Accordingly, the matter will be addressed in a future rule-making action. However, the Bureau has adopted requirements pertaining to empty packagings having a capacity greater than 110 gallons because the Bureau believes there is sufficient quantity of material in an "empty" tank to warrant regulation.

173.30 Revised to include references to the loading and unloading requirements from 46 CFR and 14 CFR for hazardous materials transported aboard vessels or aircraft.

173.31, 173.32, and 173.33 Incorporate provisions of 46 CFR. Several comments suggested changing the word "Testing" to "Retesting." The Bureau considers the word "Qualification" to include testing and retesting requirements and has made the appropriate changes.

173.34 No substantive changes.

173.51 The language of this section formerly indicated a prohibition of transportation of certain explosives by common carriers. Due to the hazards presented by the materials covered by this section, the Bureau takes the position that this prohibition must be applicable to all types of carriers including private and contract carriers.

173.52, 173.54, 173.56, 173.57, 173.58, 173.59 and 173.60 Deletes reference to rail express and clarifies certain marking and labeling provisions.

173.61 No substantive changes.

173.62, 173.63, and 173.64 Deletes reference to rail express.

173.65 A change to exemption provisions, deletes authorization for shipment by rail express.

173.66 Deletes obsolete reference to emergency.

173.67, 173.68, and 173.69 Deletion of references to rail express.

173.70, 173.71, 173.72, 173.74, 173.75, 173.76, 173.77 and 173.78 Deletes reference to rail express, and eliminates types of carriage, as discussed earlier in this preamble for § 173.51.

173.79 and 173.80 Deletes reference to rail express.

173.87 No substantive changes.

173.89 and 173.90 Deletes reference to rail express.

173.91 and 173.92 No substantive changes.

173.93 Deletes reference to rail express, adds provisions applicable to cargo-only aircraft from 14 CFR.

173.94 No substantive changes.

173.95 Deletes reference to rail express.

173.101 No substantive changes.

173.103 Deletes reference to rail express.

173.104, 173.105, 173.106, 173.107, 173.108 and 173.109 No substantive changes.

173.110 Deletes reference to rail express.

173.111, 173.112, and 173.114 No substantive changes.

173.115 Paragraph (f) has been deleted in light of the definition provided in § 171.8. The proposed amendment to § 173.115 pertaining to a thermally unstable material is withdrawn pending further study of the defining criteria for such material. However, the Bureau intends to use the provisions of § 173.115 (g) adopted under Docket HM-102 (40 FR 22263) when it determines that a material should be made subject to the regulations due to its thermally unstable properties.

173.116 In Notice HM-112 packagings were required to be provided with sufficient outage to be less than liquid full at 130° F. This reference temperature was selected as the highest likely to be encountered in transportation in the United States. Many comments objected to this reference temperature on the grounds that no recognition was given to insulated tanks, heat sink capacity of large liquid volumes, etc. The Bureau agrees and has limited this requirement to packagings with capacities of 110 gallons or less.

173.116a Deleted. This proposal is withdrawn in light of proposals adopted under Notice 73-9a (40 FR 4537).

173.118 In Notice HM-112, it was proposed in paragraph (a) to change the requirements pertaining to "Exempt" quantities of flammable liquids. In light of changes to these amendments pertaining to the ORM-D class, the Bureau has decided not to proceed with the changes to this section which would require labeling of "exempt" quantities except for shipments offered for transportation by air. However the Bureau believes that in order to provide proper hazard communication they should not be exempt from marking requirements and has revised the regulation accordingly.

The Bureau believes that materials presenting hazards identified by more than one class should not, in the interests of safety, be allowed the exceptions specified in paragraph (b) of this section, and revised the paragraph accordingly.

173.118a A new section on exception provisions for combustible liquids incorporating requirements from 173.118 and provisions relating to air and water shipments has been added. Many comments were directed toward a "new" requirement for marking tank cars with the proper shipping name. The only such marking requirement is for tank cars containing combustible liquids when exported by vessel.

173.119 Subparagraphs (a)(1), (b)(7), (k)(3), (m)(1), (m)(5) and (m)(8) have been revised to prohibit use of certain packagings for the transportation of flammable liquids aboard aircraft since the Bureau does not consider them suitable for such service. Also, a provision has been added to subparagraph (a)(3) restricting use of drums specified therein to capacities of 5 gallons or less. Paragraph (b) has been revised for the same reasons stated for the revisions to § 173.118(b). Paragraph (l) has been deleted as unnecessary. Paragraph (m) has been amended to recognize the additional hazards of organic peroxides and poison B liquids. Section 173.119 (a) and (b) have been amended to reflect this change. Several comments of an editorial nature have been recognized.

173.119a and 173.119b Deleted as unnecessary because of the provisions of §§ 173.118 and 173.118a.

173.120 Simplification of requirements applicable to vehicles being transported by rail or highway.

173.121 Deletes reference to rail express. 173.122 References § 172.330. 173.123 No substantive changes. 173.124 References § 172.330.

173.125 Deletes obsolete reference to emergency, and prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.126 Deletes references to rail express. 173.127 No substantive changes.

173.128 Incorporates requirements of 46 CFR and prohibits the use of certain packaging aboard aircraft since the Bureau does not consider them suitable for such service. Deletes obsolete reference to an emergency and removes marking and labeling exceptions. Many comments objected to the deletion of marking and labeling exceptions on the basis of safety experience over the past several years. Notwithstanding, in view of the necessity for an improvement in the communication of hazard information, the Bureau believes that these marking and labeling requirements are essential.

173.129 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such a service and deletes certain labeling and marking exceptions. Many comments objected to the deletion of marking and labeling exceptions. For the reasons cited in § 173.128, the Bureau believes these deletions necessary.

173.130 Deletes marking exception for refrigerating machines containing a limited amount of flammable liquid to improve hazard information communication. However, in response to comments, the Bureau agrees that retention of the labeling exception is justified, except that this exception is not applicable to transportation by air.

173.132 Incorporates provisions of 14 CFR and prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service and deletes marking and labeling exceptions. See discussion of § 173.128.

173.133 Deletes obsolete reference to an emergency. 173.134 Deletes reference to rail express.

173.135 and 173.136 Incorporate provisions of 14 CFR, and in § 173.138 includes diethyl dichlorosilane based on reclassification.

173.137 No substantive change. 173.138 Deletes reference to rail express. 173.139 References § 172.330. 173.140 and 173.141 No substantive changes. 173.143 Deletes reference to rail express. 173.144 . See discussion for § 173.129. 173.145 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such use. 173.146 No substantive change.

173.147 Deletes marking exception for limited quantities of methyl vinyl ketone to improve hazard information communication, however, in response to comments, the Bureau agrees that retention of labeling exception is justified, except that this exception is not applicable to transportation by air.

173.148 and 137.149 No substantive change.

173.149a Adds packaging provisions for shipments of nitromethane to recognize addition to Hazardous Materials Table.

173.149b This proposed section withdrawn since the Bureau believes formaldehyde to be properly classed as ORM–A.

173.150 No substantive change.

173.151 and 173.151a These provide a separate classification and definition for an oxidizer and an organic peroxide to recognize different hazard characteristics. Several comments were directed toward the definition of an oxidizer in comparison to that provided under the Hazard Information System in HM–103. Because the proposal with respect to the Hazard Information System has been withdrawn from HM–103, these comments are not pertinent. A comment recommended establishment of standard tests for classification of organic peroxides. This suggestion will be addressed in future rulemaking.

173.153 Deletes marking exception for certain quantities of flammable solids, oxidizers and organic peroxides to improve hazard information communication. However, in response to comments, the Bureau agrees that retention of the labeling exception is justified, except that this exception is not applicable to transportation by air.

173.154 No substantive change. 173.154a, 173.155, and 173.158 No substantive changes. 173.159 Deletes reference to rail express, incorporates provisions of 46 CFR.

173.160 and 173.161 No substantive changes.

173.162 Deletes marking exception for charcoal to improve hazard information communication. However, in response to comments, the Bureau agrees that retention of the labeling exception is justified, except that this exception is not applicable to transportation by air. Also deletes reference to rail express. Removes authorization for the use of bags aboard aircraft, since the Bureau does not consider them suitable for such service.

173.163 No substantive changes.

173.164 Addition of "Chromic acid mixture, dry" in response to Manufacturing Chemists Association's petition, and clarification of gross weight restriction.

173.165, and 173.166 No substantive changes. 173.167 Deletes reference to rail express. 173.168 No substantive change. 173.169, 173.170, 173.171, 173.172, and 173.174 Deletes reference to rail express. 173.175 No substantive change.

173.176 Deletes marking exception for matches, strike-on-box, book and card, (when packaged in outside wooden or fiberboard boxes with nonflammable material) to improve hazard information communication. However, the Bureau feels that retention of the labeling exception is justified except that this exception is not applicable to transportation by air. Also deletes reference to rail express. The word "exposed" has been deleted because this material is considered hazardous regardless of whether or not it has been exposed.

173.177 Deletes obsolete reference to an emergency.

173.178 Deleted as no longer necessary and replaced by a new section 173.178 to prescribe packaging requirements for calcium carbide to recognize its addition to the Hazardous Materials Table. Several comments objected to a requirement that calcium carbide be packaged in accordance with § 173.154 citing transportation safety experience over several years with other packagings. The Bureau agrees with these comments and, since the exclusion of moisture is the primary safety consideration in handling calcium carbide, has prescribed water-tight containment as a requirement for transportation.

173.179, 173.180 and 173.181 Deleted as no longer necessary. 173.182 Deletes labeling exception for nitrates to improve hazard information communication.

173.183 and 173.184 No substantive change. 173.185 Deletes reference to rail express.

173.186 Deletes obsolete reference to an emergency and reference to rail express.

173.187 No substantive change. 173.188 Deletes obsolete reference to an emergency. 173.189 No substantive changes.

173.190 References § 172.330, deletes reference to rail express and authorizes air transportation. Incorporates provisions of existing § 173.232 with respect to transportation of tank cars containing residual phosphorous.

173.191, 173.192, 173.193 and 173.194 No substantive changes. 173.195 Editorial, and deletes obsolete reference to an emergency. 173.196 Deletes reference to rail express. 173.197 Deletes reference to rail express. 173.197a and 173.198 No substantive changes. 173.199 and 173.200 Deletes reference to rail express. 173.201, 173.202, and 173.203 No substantive changes.

173.204 Deletes obsolete reference to an emergency. Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.205 No substantive changes.

173.206 Adds packaging requirements for several commodities to recognize additions to Hazardous Materials Table, and retains labeling exception for lithium or rubidium metal in cartridges.

173.207 and 173.208 No substantive changes.

173.209, 173.210, and 173.211 Deletes reference to rail express. 173.212 No substantive change. 173.213 Deletes reference to rail express. 173.214 and 173.216 No substantive changes.

173.226 Deletes marking exception for thorium metal, powdered, to improve hazard information communications, however, the Bureau feels the retention of the labeling exception is justified except that this exception is not applicable to transportation by air.

173.227 and 173.228 No substantive changes. 173.229 Delctes marking exception for chlorate and borate mixtures or chlorate and magnesium chloride mixtures to improve hazard information communication, however, the Bureau feels the retention of the labeling exception is justified except that this exception is not applicable to transportation by air.

173.217 Deletes marking exceptions for certain commodities to improve hazard information communication. However, the Bureau feels the retention of labeling exceptions is justified, except

that this exception is not applicable to transportation by air.

173.218 and 173.219 No substantive changes.

173.220 Deletes marking exceptions for magnesium or zirconium to improve hazard information communications. However, the Bureau feels the retention of the labeling exceptions is justified, except that this exception is not applicable for transportation by air.

173.221 and 173.222 No substantive changes.

173.223 Deletes marking exception for peracetic acid to improve hazard information communications. However, the Bureau feels the retention of the labeling exception is justified, except that this exception is not applicable to transportation by air.

173.224 No substantive change.

173.225 Adds packaging requirements for phosphorous trisulfide and phosphorous heptasulfide to recognize additions to Hazardous Materials Table.

173.226 Deletes marking exception for thorium metal, powdered, to improve hazard information communications, however, the Bureau feels the retention of the labeling exception is justified except that this exception is not applicable to transportation by air.

173.227 and 173.228 No substantive changes. 173.229 Deletes marking exception for chlorate and borate mixtures or chlorate and magnesium chloride mixtures to improve hazard information communication. However, the Bureau feels that the retention of the labeling exception is justified except that this exception is not applicable to transportation by air.

173.230 and 173.231 No substantive changes.

173.232 Former provisions of this section are incorporated in § 173.190. A new § 173.232 has been added to provide for the transportation of aluminum powder in recognition of the hazard characteristics of the material.

173.233, 173.234, 173.235 and 173.236 No substantive changes. 173.237 Adds packaging requirements for chloric acid to recognize addition to Hazardous Materials Table. 173.238 Deletes reference to rail express. 173.239 and 173.239a No substantive changes.

173.240 Recognizes deletion of materials which are corrosive only to aluminum. Such materials will be classed as ORM–B and regulated for air transportation only. The Bureau believes that these materials present a hazard limited to air transportation.

173.241 Specifies reference temperature of 130° F. for filling requirement.

173.242 No substantive change. 173.244 Deletes marking exception for certain quantities of corrosive materials to improve hazard information communication. However, in response to comments, the Bureau agrees that the retention of labeling exception is justified except that this exception is not applicable to transportation by air. One comment pointed out the deletion of glass bottles as authorized inside containers for corrosive liquids. The Bureau agrees that these are suitable containers and has modified the section accordingly. Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service. Several comments contended that the wording of § 173.245 (b) prohibits the use of plated, clad or lined tanks. The Bureau agrees and has deleted the word "entirely" to permit such use.

173.245a, 173.245b, and 173.246 No substantive changes. 173.247, and 173.248 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.247a No substantive change. 173.249 Deletes marking exception for certain materials to improve hazard information communication. However, in response to comments, the Bureau agrees that the retention of labeling exception is justified except that this exception is not applicable to transportation by air. Several comments objected to the proposed deletion of certain specification tank cars and packagings. The Bureau considers these objections valid and has retained the tank cars as accepted packaging. The packagings deleted by the amendment to this section are now provided for in § 173.245. Specifically identifies certain additional materials with similar hazard characteristics and makes several editorial changes.

173.250 Simplification of requirements for transportation of automobiles and other vehicles equipped with wet storage batteries.

173.251 No substantive change. 173.252 References the marking requirements of § 172.330, prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service. 173.253 Deletes obsolete reference to an emergency.

173.254, and 173.255 No substantive changes. 173.256, 173.257, and 173.258 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.259 No substantive change. 173.260 Removes exception for carload quantities of electric storage batteries (wet) by rail. Experience demonstrated that shipment of these types of batteries in tightly closed rail cars pose an unacceptable hazard.

173.261 Deletes marking exception for fire extinguisher charges which are corrosive to improve hazard information communication. However, the Bureau feels that retention of the labeling exception is justified, except that this exception is not applicable to transportation by air.

173.262 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.263 Deletes obsolete reference to an emergency. Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service. Deletes marking exceptions for certain corrosive liquids to improve hazard information communications, however, the Bureau feels that retention of the labeling exception is justified, except that this exception is not applicable to transportation by air.

173.264 Deletes obsolete reference to an emergency and also references the marking requirements of § 172.330. Incorporates provisions of 46 CFR.

173.265 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.266 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service and references the marking requirements of § 172.330.

173.267 Deletes reference to rail express, and prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.268 Deletes reference to rail express and references the marking requirements of § 172.330.

173.269 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.270, and 173.271 No substantive changes. 173.272 Deletes marking exception for certain concentrations of sulfuric acid to improve hazard information communication. However, the Bureau feels that retention of labeling exception is justified, except that this exception is not applicable to transportation by air. Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.273 References the marking requirements of § 172.330. 173.274, and 173.275 No substantive changes.

173.276 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.277 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service. Also deletes marking exceptions for hypochlorite solutions to improve hazard information communication. However, the Bureau feels that retention of labeling exception is justified, except that this exception is not applicable to transportation by air.

173.278 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.279 Deletes marking exception for anisoyl chloride to improve hazard information communications. However, the Bureau feels that the retention of labeling exception is justified, except that this exception is not applicable to transportation by air.

173.280 Deletion of diethyl dichlorosilane to reflect its reclassification from a corrosive to a flammable liquid. The packaging requirements for this material are now provided for in § 173.135. Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.281, 173.282, and 173.283 No substantive changes. 173.286 Proposed changes deleted. No substantive change. 173.287, and 173.288 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.289 Deletes authorization of Bureau of Explosives approval. Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.290 No substantive change. 173.291 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.292, 173.293 and 173.294 No substantive changes. 173.295 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.296 and 173.297 No substantive changes. 173.298 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.299, 173.299a and 173.300 No substantive changes. 173.301 Proposed changes deleted. No change from current 49 CFR. 173.302 and 173.303 No substantive changes. 173.304 Proposed changes deleted. No substantive change.

173.306 Deletes marking exception for certain compressed gases to improve hazard information communication. However, in response to comments, the Bureau agrees that retention of the labeling exception is justified, except that this exception is not applicable to transportation by air. Also, in response to several comments, the word "receptacle" has been replaced by "container", and in 173.306(d)(2) a provision has been introduced to authorize transportation of vehicles with fuel tank emptied and securely closed. In response to many comments, the maximum capacity for containers excepted from marking and labeling has been increased to 50 cubic inches. The Bureau believes this change does not affect the transportation safety of this material. Other comments directed to this section and concerning the inclusion of pneumatic accumulators as well as a revision of the pressure and volume criteria for determining requirements may be considered in separate rulemaking.

173.307 New section excepting from the requirements of this subchapter, certain compressed gases which pose no hazard during transportation.

173.308 New section setting forth requirements for shipment of cigarette lighters or similar devices charged with fuel to recognize the hazard peculiar to these devices.

173.314 References the marking requirements of § 172.330. 173.315, and 173.316 No substantive changes.

173.325, 173.326, 173.343, and 173.381 Retains definitions that were proposed to be deleted for poisonous gas or liquid, Poison A, poisonous liquid or solid, Poison B and irritating material. In response to comments on this rulemaking, the Bureau has agreed that "Poisonous materials" is more meaningful in communication than is "Toxic materials" and has made this change. In consideration of comments to Docket HM-51, the Bureau had proposed in this notice to introduce a new classification approach for toxic materials. Several comments objected on the grounds that this change would require extensive procedural changes and merits further study. It is the intent of the Bureau to proceed with new rulemaking action on poisonous materials at the earliest possible date. This rulemaking will take into account the comments received and the recent developments in the classification of poisonous materials by other government agencies as well as international organizations. One of the major aims of the future rulemaking will be to propose classifications that will not be in conflict with those of other U.S. or international agencies.

173.327 Specifies reference temperature for 130° F. for filling requirement. Recognition is given for packagings of greater than 110 gallons capacity to be excepted from these requirements as discussed regarding § 173.116. Also references marking requirements of § 172.330.

173.328, 173.329, 173.330, 173.331, and 173.332 No substantive changes. 173.333 Incorporates provisions of 46 CFR. 173.334 Requires approval of cylinder valves by the Department in place of the Bureau of Explosives. 173.335 Obsolete and deleted. The Bureau understands that the police grenades covered by this section are no longer shipped. 173.336 Incorporates provisions of 46 CFR. 173.337 No substantive change. 173.338 Obsolete and deleted. The Bureau understands that the commodities covered by this section are no longer shipped. 173.343 See discussion for 173.325.

173.344 Specifies reference temperature of 130° F. for filling requirement. Recognition is given for packaging of greater than 110 gallons capacity to be excepted from these requirements as discussed regarding § 173.116.

173.345 Deletes marking and labeling exceptions for poisonous liquids to improve hazard information communication. 173.346 Prohibits use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.347 Deletes obsolete reference to an emergency. 173.348 and 173.349 Prohibits use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service. 173.350 No substantive change. 173.351 Adds performance tests for glass packagings to assure adequacy of containment.

173.352 Prohibits use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.353 Deletes obsolete reference to an emergency and incorporates provisions of 46 CFR. 173.354, 173.355, and 173.356 No substantive changes. 173.357 Proposed changes deleted. Deletes obsolete reference to an emergency and incorporates provisions of 46 CFR. No other change from current 49 CFR.

173.358 Proposed section 173.358a deleted. See discussion for § 173.326. 173.359 Proposed change from poison to toxic deleted. Marking and labeling exceptions are deleted for certain Poison B materials to improve hazard information communication. Proposed section 173.359a deleted. See discussion for § 173.326.

173.360, 173.361, 173.362, 173.362a, and 173.363 No substantive changes. 173.364 Proposed change from poison to toxic deleted. Marking and labeling exceptions are deleted for certain Poison B materials to improve hazard information communications.

173.365 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service. 173.367 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service.

173.368 No substantive change. 173.369 and 173.370 Prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service and deletes marking and labeling exceptions for certain Poison B materials to improve hazard information communication.

173.371 Adds reference temperature for determining physical form of dinitrobenzol to establish packaging requirements. 173.372, 173.373 and 173.374 No substantive changes. 173.375 Deletes obsolete reference to an emergency. 173.376 No substantive change.

173.377 Proposed change deleted, except marking and labeling exceptions are deleted for certain Poison B materials to improve hazard information communication, and prohibits the use of certain packagings aboard aircraft since the Bureau does not consider them suitable for such service. Proposed sections 173.377a and 173.377b deleted. See discussion for § 173.326.

173.379 No substantive change. 173.381 See discussion for § 173.326. Also sets forth additional packaging requirements to improve transportation safety. In response to comments, the Bureau does not believe that the proposed requirement for packages to be "Hermetically closed" is more restrictive than the present requirement for packages to be "tightly closed." Therefore, this amendment adopts the proposed language.

173.382 Clarification of packaging requirements for compressed gas mixture with irritating materials, and specifically identifies certain additional materials with similar hazard characteristics and establishes packaging requirements for those materials.

173.384 Deleted as obsolete. The Bureau understands that the material covered by this section is no longer being shipped.

173.385, 173.386, and 173.387 No substantive change. 173.389 through 173.398 No substantive change. 173.399 Deleted. The labeling provisions of this section have been incorporated in new § 172.403. 173.400 through 173.417, and 173.420

through 173.422 Deleted. The provisions of this section have been incorporated in new § 172.423. 173.425 Deleted because the regulations are no longer necessary.

173.426 Editorial clarification. 173.427, 173.430, and 173.431 Deleted. See new § 172.204.

173.432 Add flammable compressed gas to those materials prohibited from being loaded into tank cars from motor vehicles or drums so as to reduce hazards in handling.

173.500 New section. Definitions of ORM–A, B, C and D materials.

173.501 New section on applicability of regulations to "Other Regulated Materials." 173.505 New section. Exceptions for "Other Regulated Materials." 173.510 New section. Sets forth general packaging requirements for "Other Regulated Materials." In response to comments, recognition has been provided for outage for packagings of over 110 gallons capacity. To be expected from these requirements. 173.605 through 173.1085 New sections added to set forth packaging requirements for materials added to the Hazardous Materials Table based on 46 CFR, and individual petitions received by the Bureau. A definition of magnetized material has been added in § 173.1020 in response to comments.

173.1050 In response to comments indicating that photographic flash bulbs do not pose a hazard during transportation, the Bureau has deleted this proposed section from this amendment.

173.1200 A new section setting forth the requirements for ORM–D materials, providing packaging and quantity limitations for certain commodities included in this class.

PART 174—CARRIERS BY RAIL

This part deals with the requirements for rail carriers engaged in the transport of hazardous materials. Comments received are addressed in a manner that will follow the format of Part 174. The section numbers for Part 174 are followed by the former section number from Title 49 in parenthesis.

174.1 (174.500) This section sets forth the purpose and scope of Part 174.

174.3 (174.501) Much of the material in former section 174.501 is covered elsewhere in the revised regulations and therefore has been deleted from this section. Since the material which was not deleted speaks entirely to shipments which are not in proper condition for transport, the heading has been changed to "Unacceptable Hazardous Materials Shipments."

174.5 (174.504) No substantive change. However, the section recognizes exception from shipper's certificate requirements for private carriage by rail.

174.7 (174.500) This section sets forth the responsibility for compliance with the requirements of Part 174. 174.8 (174.501 174.589 174.598) This section incorporates some of the material mentioned as being deleted in connection with § 174.3. It also requires an inspection of all placarded cars at points where trains are required to be inspected. The Bureau believes that this requirement will contribute substantially to safety without placing an unreasonable burden on the rail carriers. Several comments were received recommending that inspection by DOT of "methods of manufacture, packing, and storage" be restricted to those items only which affect safety in transportation. This recommendation has been incorporated in the wording of this section.

174.9 (174.596) No substantive change. Several comments were received relating to the "card". As recommended by these comments, the "card" has been revised to permit showing that either the tank, the safety valve, or both, is overdue for retest and the correct section reference has been inserted.

174.10 (174.598) No substantive change. Several commenters objected to some provisions of this inspection requirement. As adopted, § 174.10 is unchanged from existing § 174.598(a) because the Bureau believes that the provisions of this section are necessary in the interest of safety.

174.11 (174.505) No substantive change. One comment was received requesting clarifying wording to indicate that shipments can be made from Canada if they comply with applicable Canadian Transport Commission Regulations. This has been incorporated.

174.12 (174.576) No substantive change.

174.14 (174.582) No substantive change. The proposed wording "flammable extremely toxic gas" has been deleted and replaced by "poison gas" in accord with the Bureau's response to comments as discussed in regard to § 173.325 of this subpart.

174.16 (174.564) No substantive change. Section 174.16 reads the same as existing § 174.564 since the Bureau believes these provisions are necessary in the interest of safety. 174.18 (174.588) No substantive change. 174.20 (174.575) No substantive change.

174.22 Some of the definitions proposed in this section have been placed in § 171.8 as suggested by several commenters. Other commenters objected to the changed definition of "train". The Bureau has reviewed these objections but is aware that some rail carriers do not use "markers" on trains, with the result that the existing definition of "train" does not have general applicability. In a court decision, it was suggested that the definition of a train be clarified and a definition be developed that would provide for a more uniform understanding and enforcement. This revised definition will define all trains, with or without markers, including "transfer trains."

174.24 (174.510) No substantive change. Rail carriers are not required to tender shipping papers for ORM materials. As suggested by several commenters, the requirement for showing the placement of each placarded car has been deleted from this section and placed in § 174.26 (numbered as § 174.25 in the Notice). Likewise "shipping paper" has been defined by reference to Subpart C of Part 172.

174.25 (174.584) Expanded to take into account the new placards required under Part 172. The requirements relating to an initial switching operation have been expanded because the Bureau believes this is necessary to provide hazard information communication. Proposed § 174.25 has been renumbered § 174.26 and a new § 174.25 has been incorporated to read consistent with existing § 174.584 which was eliminated inadvertently from the Notice. It requires no additional burden and is consistent with an existing regulation. The "Dangerous" placard endorsement requirement for combustible liquid shipments has been removed since placement in the train of such shipments is not specified. In addition, the placard notation has been amended to read "Combustible".

174.26 (174.589) (HM–112, § 174.25) Revised section that includes a notice to train crews regarding "Poison" placarded cars in addition to "Explosives" placarded cars. The Bureau believes that the degree of hazard presented by "Poison" placarded cars is comparable to that presented by cars placarded "EXPLOSIVES A." Deletion of "Notice to Crews" for Class B Explosives has been made. One comment was received regarding the possibility of this section applying to switching. The section indicates in Paragraph (a) that it applies only to trains. Another commenter is concerned that chlorine laden rail cars would be subject to "Notice to Crews" requirements. Deletion of the "HI number" references removes chlorine from this requirement.

Commenters requested that a "Notice to Crews" be used to indicate the location of all placarded cars in a train and that this "Notice" may be used in lieu of a consist. The Bureau believes that a requirement for notification to train crews of the position of any placarded cars is essential for hazard information communication, but that it is not necessary that all of their information be on the "Notice to Crews." The consecutively numbered "Notice to Crews" is reserved for the materials considered to have maximum hazards and the information on the other cars permitted to be on another document such as a train consist.

174.27 (174.511) These provisions now appear in Part 172.

174.33 (174.507, 174.547) No substantive change. One comment was received objecting to the requirement that rail carriers have an adequate supply of labels. This provision currently is in section §174.507 as is the placard supply requirement existing in § 174.547. The Bureau believes these requirements necessary to ensure hazard information communication. 174.45 (174.506) No substantive change. A commenter requested that reports be made to the Bureau of Explosives. This section does not preclude the submission of these reports to the Bureau of Explosives. 174.47 (174.580, 174.588) No substantive change. 174.49 (174.578) No substantive change.

174.50 (174.594) The revision deletes certain non-regulatory language and makes the provisions of the section applicable to any leaking tank cars since

the Bureau believes that these requirements should apply to all hazardous materials rather than a certain few.

174.55 (174.532) Incorporates several new requirements for the handling of hazardous materials in general. The Bureau believes in the interest of safety that some of these requirements which were formerly limited to certain classes of materials must be expanded to cover all classes. Reference to the Bureau of Explosives procedures has been made recommendatory rather than mandatory as proposed in the notice since the Bureau believes that other methods may be equally satisfactory.

174.56 (174.532) No substantive change. This section separately sets forth specific requirements for the loading of drums containing hazardous materials into rail cars. 174.57 (174.566) No substantive change. 174.59 (174.589) No substantive change. As a result of several comments, the proposed requirement to allow movement of rail car without proper placards and car certificates only by obtaining approval from the Department has been deleted to facilitate short movements in wrecking operations. 174.61 (174.533) No substantive change except to include these tanks in COFC service. This section has been amended to authorize these tanks in COFC service only when approved by the Federal Railroad Administrator because the Bureau believes that adequate tie-downs are essential for safe transportation. Several comments were received concerning center-of-gravity greater than 98 inches. As a result, this matter has been deleted and will be revised and incorporated into a test procedure to be used by the Federal Railroad Administrator in evaluating proposed methods of securement. Also, the wording in this section has been revised so as to make its provisions consistent with § 174.61. Bureau of Explosives Pamphlet 6C is referenced as a recommended method, rather than as a mandatory method.

174.67 (174.561) In several places recommendations have been made mandatory because the Bureau believes these requirements are essential to safety in transportation. Several commenters recommended that this section be revised in accordance with a proposal submitted by the Manufacturing Chemists' Association. Because the MCA proposal is considered substantial and was received by the Department after the publication of Docket HM–112, it will be considered in future rulemaking activities.

174.69 (174.562) No substantive change. As recommended by several commenters, the requirement to remove "commodity cards" has been deleted. 174.81 (174.538). No substantive change. Several comments were received requesting that "in transportation" be added to paragraph (a) so as to delineate DOT requirements from those of other agencies. The scope of Parts 170–189 is clearly defined as transportation regulations and such a reference in this section would be duplicative. 174.83 (174.589(d)) No substantive change. Several comments were received concerning the added expense of "shoving to rest" certain tank cars such as those transporting chlorine. The section has been revised to clearly denote the need for such handling for cars placarded "EXPLOSIVES A" and "POISON GAS" as is required by current regulations.

174.84 (174.589(c)) No substantive change. This section is an extension of the provisions in section 174.589(c). Although two comments were received objecting to this section, the Bureau believes that returning these requirements is necessary for adequate safety in switching flat cars loaded with placarded trailers or containers. 174.85 (174.589(e)) No substantive change, except that an editorial change has been made to indicate that it applies only to cars placarded "EXPLOSIVES A."

174.86 (174.589(1)) No substantive change. 174.87 (174.589(m)) Incorporates provisions in proposed §§ 174.87, 174.89, 174.90, 174.93 and 174.95 that deal with placing of placarded cars in passenger and mixed trains. Paragraphs (a) and (a)(1) are expanded to include the placement of all placarded cars except those requiring the COMBUSTIBLE placard. The Bureau believes this necessary in the interest of safety. Paragraph (a)(2) is expanded to include all hazardous materials requiring labels for reasons of hazard information communication. In accordance with one comment, paragraph (a)(2) has been changed to say "requiring" rather than "bearing" so as to clarify the meaning of the requirement.

174.88 (174.589(g)) Several comments were received recommending that the "middle of the block" requirement be deleted. The Bureau agrees and has deleted paragraph (b)(2) in its entirety.

174.89 (174.589(n)) As proposed, this section now prohibits positioning a car placarded "Radioactive Materials" next to any other placarded car (other than one placarded "Combustible" or "Radioactive Materials"), an engine, occupied caboose, or carload of undeveloped film.

174.90 (174.589(h), (k)) No substantive change. 174.91 (174.589(i)) The existing train placement exception for tank cars placarded DANGEROUS when moved in a train consisting entirely of DANGEROUS placarded tank cars has been eliminated since the Bureau believes the use of buffer cars to be essential for safety in transportation.

174.92 (174.589(j)) No substantive change. 174.93 New section which sets forth a requirement that at least one buffer car be placed between an empty placarded tank car and the engine or caboose. Since "empty" tank cars may contain a substantial quantity of product, the Bureau believes that this provision is necessary for adequate safety.

174.95 (174.589) The proposed revisions of this section have been incorporated in § 174.87. 174.100 (174.502) No substantive change. 174.101 (174.526) No substantive change. Numerous comments were received requesting Bureau of Explosives Pamphlets No. 6 and 6A not be made mandatory. This has been done since the Bureau believes that other methods may be equally satisfactory. 174.102 (174.527) No substantive change. 174.103 (174.588) No substantive change. One comment was received recommending that paragraph (c)(2) be amended to read "* * * competent, who has been duly certified by the Department, or is willing * * *" The Bureau does not wish to develop a certification program for distressed explosive shipments, preferring to rely upon the rail carriers and the Bureau of Explosives for proper disposition.

174.104 (174.525) No substantive change however, incorporates amendments published under Docket HM–114. 174.105 (174.581) No substantive change. 174.106 (174.503) No substantive change. 174.107 (174.577) No substantive change. 174.109 (174.585) No substantive change.

174.110 (174.591) Revised to require placarding regardless of the presence of a responsible employee because the Bureau believes that even an occasional absence of the appropriate placard would reduce safety.

174.112 (174.529) No substantive change. One comment was received mentioning that Class B Explosive laden box cars would require either steel floors or spark shields. This is the intent and is incorporated in the final rule. Reference to Bureau of Explosives' Pamphlet Nos. 6 and 6C has been made recommendatory rather than mandatory since the Bureau believes that other methods may be equally satisfactory. 174.114 (174.590) No substantive change.

174.115 (174.530) Deletes the "no placards required" provision from existing rule. Under this amendment, FLAMMABLE placards are required for cars containing Class C explosives. The Bureau believes this placarding is necessary because these materials do present a serious fire hazard in transportation. One comment was received saying that the intent of the section is obscure. We have reviewed this section which was § 174.530 and believe that the intent to specify loading requirements for Class C explosives is clearly stated. Reference to Bureau of Explosives' Pamphlet Nos. 6 and 6C has been changed to recommendatory rather than mandatory since the Bureau believes that other methods may be equally satisfactory.

174.200 (174.532) Revised to apply only to shipments of flammable gases. Special handling requirements for flammable liquids are now set forth in § 174.300 of this amendment.

174.201 (174.532) No substantive change. Several comments were received regarding 106A and 110A tanks being subject to this requirement. In order to accommodate these suggestions, the heading to this section has been changed to "Compressed gas cylinders" eliminating reference to ton multi-unit tank car tanks.

174.204 (174.560) No substantive change except revised to apply only to compressed gases. Requirements for tank

cars containing flammable liquids or Poison A materials are now set forth in § 174.304 and § 174.600 respectively.

174.208 (174.579) Incorporates provisions that were proposed in § 174.625. Revised to include cars loaded with truck bodies and trailers. The Bureau believes that these present hazards just as great as those presented by cars when they have been fumigated.

174.280 (174.532) A section prohibiting any package of gaseous material bearing a poison label from being transported in the same vehicle with edible materials.

174.290 (174.532) No substantive change. One comment was received requesting revision of § 174.290(a)(7) to reference Department of Defense procedures and specifications. The reference has been incorporated in this amendment. Existing requirements in § 174.532(1) (8–13) were inadvertently not included in the Notice, but have been provided for in this amendment.

174.300 (174.532) Sets forth special handling requirements for flammable liquids that were formerly provided in § 174.532. One commenter mentioned the inconsistency that TOFC units can have certain heating and refrigerating devices whereas rail cars may not. The Bureau is aware of this difference but believes no amendment is necessary since, to our knowledge, the type of equipment in question is not utilized in rail service.

174.304 (174.560) Sets forth tank car delivery requirements for flammable liquids that were formerly provided in § 174.560. No substantive change.

174.380 (174.532) A section prohibiting any package of flammable liquid bearing a poison label from being transported in the same vehicle with edible materials.

174.410 (174.532) No substantive change. 174.450 (174.592, 174.593) No substantive change. 174.480 (174.380) A section prohibiting any package of flammable solids bearing a poison label from being transported in the same vehicle with edible materials.

174.510 (174.532) No substantive change. 174.515 (174.566) No substantive change except revised to apply only to potassium permanganate. Requirements for cleaning cars which contained poisons are now set forth in § 174.615 of this amendment.

174.580 (174.532) A section emphasizing that, regardless of class, any package bearing a poison label must not be transported in the same vehicle with edible materials.

174.600 (174.560) Sets forth special handling requirements for Poison A materials (regardless of flash point) that formerly appeared in § 174.560.

174.615 (174.566) Sets forth requirements for the cleaning of cars that contained poisonous materials. These requirements formerly appeared in § 174.566.

174.625 (174.579) The provisions of this proposed section have been incorporated in § 174.208.

174.680 (174.532) Sets forth the general prohibition against transporting any package bearing a poison label in the same vehicle with edible materials. No substantive change.

174.700 (174.532, 174.586) No substantive change. One editorial comment was received and the words "continuously occupied" are now used to clarify the intent of the requirement in paragraph (c) of this section. 174.715 (174.566) No substantive change. One comment was received regarding responsibility for cleaning cars. This comment, considered beyond the scope of the HM–112 Notice, may be the subject of future rulemaking. 174.750 (174.588) No substantive change. 174.800, 174.810, 174.812, (174.532, 174.586) No substantive change. The reasons for consolidating the requirements regarding corrosive materials into these sections were to facilitate use of the regulations. In § 174.810, wet electric storage batteries are prohibited from being loaded in refrigerator cars or "plug-door" type cars because experience has demonstrated that shipment of these type of batteries in such cars poses an unacceptable hazard.

Part 175—Carriage by Aircraft

This part deals with the carrier requirements for aircraft operators engaged in the transport of hazardous materials which were formerly in 14 CFR Part 103. Comments received are addressed in a manner that will follow the format of Part 175.

175 One comment objected to the absence of definitions in this part. This objection was handled by consolidating all definitions in § 171.8.

175.1 New section describing the purpose and scope of Part 175. 175.3 New section on the acceptability of hazardous materials shipments for transportation by air.

175.5 Applicability provision transferred from 14 CFR Part 103. One commenter recommended that this section disclaim any applicability of the International Air Transport Association (IATA) Regulations. This comment was not within the scope of the proposed rulemaking and cannot be made part of this rulemaking.

175.10 Sets forth exceptions from this part for certain commodities formerly covered in 14 CFR Parts 103, 121, and 134. Exceptions for radioactive materials formerly in 14 CFR Part 103 are now provided for in § 173.7 of this subchapter.

175.20 Requirements with regard to who must comply with applicable regulations are transferred from 14 CFR Parts 121 and 135.

175.30 Specifies the responsibilities of aircraft operators with respect to accepting hazardous materials shipments for transportation. Requirements are transferred from 14 CFR Part 103. Several comments suggested editorial changes which were adopted. Also, one comment recommended that the amendment be changed to preclude aircraft operators from accepting hazardous materials shipments prepacked by shippers in transport containers. Because this section requires the operator of an aircraft to inspect the "outside container" (see § 171.8 of this amendment) in which a hazardous material is packaged before placing the material aboard an aircraft, the Bureau believes that the concern of the commenter has been answered. However, an express prohibition against tendering prepacked transport containers may be considered in future rulemaking.

175.33 Requirements for notifying pilot-in-command are transferred from 14 CFR Part 103.

175.35 New section setting forth shipping paper requirements for air transportation to provide hazard information communication. 175.40 New section covering labeling maintenance and replacement requirements for aircraft operators so as to maintain hazard information communications.

175.45 Requirements for reporting hazardous materials incidents are transferred from 14 CFR Part 103.

175.75 Quantity limitation requirements are transferred from 14 CFR Part 103. Several comments objected to the proposal that the quantity limitations be changed from 50 pounds net weight to 65 pounds gross weight for hazardous materials loaded in an inaccessible cargo pit or bin and from 150 pounds to 300 pounds for nonflammable compressed gases loaded under the same conditions. The Bureau agrees that gross weight limitation would not clearly identify the amount of hazardous materials that may be contained in a package and that the net weight limitation should be used. The amendment has been changed to reflect these recommendations.

175.78 Stowage compatibility requirements are transferred from 14 CFR Part 103. One comment suggested this section be changed to reference the compatibility-of-cargo requirements for rail and highway currently contained in 49 CFR. This suggestion was not adopted because the Bureau believes that the limitations imposed which require corrosive materials not be stowed in a position that will allow contact with a package of flammable solids, oxidizers, or organic peroxides are sufficient to permit an adequate level of safety.

175.79 New section setting forth loading and storage requirements for packages that are marked for package orientation to minimize the possibility of leakage.

175.85 Cargo location requirements are transferred from 14 CFR Part 103. Three comments objected to the accessibility and safeguarding portions of this proposal. The Bureau believes these requirements to be necessary in the interest of safety. The exception to the accessibility requirement embodied in paragraph (b) of this section was adopted under Docket HM–128 (see 40 FR 58284, December 16, 1975).

175.90 Requirements with respect to damaged or leaking packages are transferred from 14 CFR Part 103.

175.305 (HM–112, § 175.205) New section setting forth requirements for transporting self-propelled vehicles to

provide for the safe transportation of those vehicles when their fuel tanks are not completely drained.

175.310 (HM–112, § 175.210; HM–128) Requirements are transferred from 14 CFR Part 103. 175.320 (HM–112, § 175.-220; HM–128) Requirements are transferred from 14 CFR Part 103. 175.630 Special requirements for poisons are transferred from 14 CFR Part 103. 175.700 Special requirements on radioactive materials are transferred from 14 CFR Part 103. 175.710 Special requirements for fissile Class III radioactive materials are transferred from 14 CFR Part 103.

PART 176—CARRIAGE BY VESSEL

This part deals with the requirements for water carriers engaged in the transport of hazardous materials which were formerly in 46 CFR Part 146. The section numbers for Part 176 are followed by the section number from Title 46 CFR in parenthesis. Comments received are addressed in a manner that will follow the format of Part 176.

The following sections were deleted and not reproduced in Part 176 because the existing provisions of 49 CFR 100–199 cover their substance:

46 CFR 146.01–1 through 6, 146.01–8 through 11, 146.02–3, 146.02–8, 146.02–14(e), 146.02–18, 146.02–19, 146.02–25, 146.02–30, 146.03–3, 146.03–6, 146.04–1 through 5, 146.05, 146.06–8, 146.07–10(b) and (c), 146.07–15, 146.08–25, 146.08–31, 146.19–1 through 30, 146.19–100, 146.20–1 through 13, 146.20–21(a), (b) and (d), 146.20–100, 146.20–200, 146.20–300, 146.21–1, 146.21–65 through 100, 146.22–1 and 3, 146.22–25, 146.22–100 and 200, 146.23–1, 146.23–30, 146.23–100, 146.24–1 through 25, 146.24–100, 146.25–1 through 15, 146.25–55 and 60, 146.25–100, 200 and 300, 146.26–1, 146.26–100, 146.27–1, 146.27–25, and 146.27–100.

The requirements for military explosives (46 CFR 146.29) are being retained in Title 46 and were not subject to any changes under HM–112.

The provisions of 46 CFR 146.09–7 and 8 were deleted as the Bureau believes the packagings therein are no longer in use.

The following sections are informative in nature rather than regulatory and hence are deleted:

46 CFR 146.02–21, 146.19–80, 146.21–10, 146.24–80, 146.25–70, and 146.26–5.

The following sections were deleted as being no longer necessary with the new format of the regulations:

46 CFR 146.03–1, 146.03–5, 146.03–8 through 10, 146.03–13 through 14, 146.03–16 through 23, 146.03–25 through 31, 146.03–33, 146.03–35, 146.03–37, 146.03–39, 146.06–3, 146.06–4, 146.06–7, 146.07–1(a), 146.07–35, 146.21–15(b), 146.22–5(a), 146.22–35, 146.23–5, 146.23–35, 146.27–5, 146.27–10, and 146.28.

The provisions for the carriage of bulk, solid hazardous materials were moved to 46 CFR Part 148.

The provisions of the following sections are addressed in § 176.83:

46 CFR 146.06–9, 146.10–5, 146.19–40, 146.20–16, 146.22–15, 146.23–25, 146.24–55, 146.25–45, 146.26–20, and 146.27–15.

176.1 (46 CFR 146.02–1) No substantive change. Several comments were received which recommended clarification of the term "vessel." This was achieved in § 171.8, devoted to definitions for this subchapter.

176.3 New section setting forth requirements for acceptability of shipments.

176.5 (46 CFR 146.02–2 146.01–7 146.02–4) No substantive change. One comment recommended provisions be provided to direct interested persons to the regulations appropriate to the carriage of hazardous materials in bulk. An additional paragraph was added to § 176.5 to accommodate this reference. Another comment suggested that specific reference be made to 46 CFR 146.29 for regulations pertinent to the shipment of military explosives. A specific reference was added to § 176.5 to reference these regulations. 176.9 (46 CFR 146.06–5) No substantive change.

176.11 (46 CFR 146.02–9 146.06–6 146.02–10, 146.02–1) Provisions covering packages of combustible liquids formerly proposed in HM–112, § 176.5 are incorporated in this section. Combustible liquids in containers of 110 gallons or less are not subject to these regulations when shipped aboard passenger vessels. Safety concerns do not warrant the regulation of those quantities of combustible liquids as their only hazard is that of additional fuel to an existing fire. A comment was received which suggested a change in wording to insure clarity. This section has been changed to recognize IMCO requirements only. This change was made to greatly increase safety control while facilitating enforcement as well as compliance.

176.13 (46 CFR 146.02–5 146.02–4) Removes reference to shipper compliance as this requirement appears in Part 172.

176.15 (46 CFR 146.02–6, 146.07–30) No substantive change. 176.18 (46 CFR 146.02–6a) No substantive change. 176.22 (46 CFR 146.03–4 146.03–6 146.03–7 146.03–11 146.03–12 146.03–15 146.03–24 146.03–32 146.03–34 146.03–38 146.03–40 146.07–1) No substantive change. See § 171.8 for stowage terms—these terms utilized by IMCO have been adopted. Several comments were received which recommended changes to the definitions as proposed. The definitions have been transferred to § 171.8 as a result of comments received and certain additions, deletions or changes have also been made as a result of the comments received. 176.24 (46 CFR 146.06–1) 146.08–15(a) No substantive change.

176.27 (46 CFR 146.05–11 146.07–20 146.08–20(a) 146.08–20(c) No substantive change. The "Certificate" statement required by this section is not being repeated in this section; as one comment stated, spelling out the statement would be redundant since Part 172 addresses certification.

176.30 (46 CFR 146.06–12 146.06–15 146.06–20 146.05–14 146.06–14) No substantive change except allows optional use of IMCO classification. In response to comments received the stowage location provided hazardous materials is being added to this section. Including this information on the dangerous cargo manifest is an existing requirement but was inadvertently omitted from the notice. Another comment indicated that the label applied to the hazardous materials should be noted on the dangerous cargo manifest. This is not considered necessary since the classification of the material will identify the label required.

176.31 (46 CFR 146.06–12) No substantive change. 176.33 (46 CFR 146.06–10) No substantive change. 176.36 (46 CFR 146.02–22) No substantive change. 176.39 (46 CFR 146.02–12 146.02–13) Reference to "vapor proof" lighting devices has been changed to "explosion proof" in light of comments received. This section has also been modified as a result of comments to accommodate situations where physical inspection of cargo is not possible. Changed to specify inspection intervals in order to provide better guidance as to intent of regulations and to facilitate safety. Temperature recording requirements dropped as being unnecessary given regular interval inspections. No other substantive changes.

176.45 (46 CFR 146.02–15 146.02–20(c)) No substantive change except for wording in § 176.45(b) reflecting regulations published elsewhere in 46 CFR in regard to pollution. Requirements of § 146.02–15(c) are now contained in § 176.710. One comment suggested that this section prohibit emergency hot work repairs except when resulting from incidents involving hazardous materials. Emergency hot work is covered by § 176.54 and the authorization of such work is not dependent upon accidents or incidents involving hazardous materials. Another comment suggested that a marine chemist should be consulted following an incident, involving hazardous materials in order that proper procedures be followed. Such a requirement may not always be applicable. The requirement to notify the District Commander is sufficient as a general requirement.

176.48 (46 CFR 146.02–15, 146.02–35, 146.20–51, 146.24–75) No substantive 164.20–51, 146.24–75) No substantive 15(b), 146.20–49(a), 146.24–70) No substantive change. A comment was received that suggested that a marine chemist be required to evaluate all damaged or leaking packages of hazardous materials. Damaged or leaking packages are not permitted for transportation unless repaired to the satisfaction of the master of the vessel. Further specifics in this section are inappropriate. This section does not preclude the vessel's master from seeking appropriate expertise.

176.52 (46 CFR 146.02–16) No substantive change. One comment received on this section requested that twenty-four hours advance notice be provided to the water carrier by the shipper, of the exact nature of the cargo. A requirement of this sort would be unenforcible. This amendment, as was proposed, requires the information on the cargo be supplied at the time of delivery, but does not pre-

clude the shipper and carrier from exchanging necessary information at an earlier time. Another comment recommended that this subpart prohibit shippers from offering hazardous materials under false or deceptive names, and prohibit the carrier from knowingly transporting such material. Part 173, shipper requirements, prohibits the shipper from offering hazardous materials under a false or deceptive name. Since Part 176 is devoted to water carrier requirements this prohibition will not be restated. The word "knowingly" is added to the prohibition on water carriers transporting such materials.

176.54 (46 CFR 146.02–20) No substantive change. Several comments were received stating that the prohibition on burning and welding were restrictive. In consideration of the comments received, this section has been modified to allow repairs involving welding and burning when authorized by the Coast Guard Captain of the Port. Emergency repairs to the vessel's main propulsion plants or auxiliaries will be authorized without prior approval. Another comment suggested that a certified marine chemist be consulted prior to the authorization of "hot work." Since the authorization to conduct "hot work" may be granted by the Coast Guard Captain of the Port, consultation with a certified marine chemist will remain at the discretion of the Captain of the Port.

176.57 (46 CFR 146.02–17, 146.08–15(b), 146.08–20(b) No substantive change. 176.58 Restrictions previously set forth for explosives in regard to requiring use of "good housekeeping" procedures now apply to all hazardous materials.

176.60 (46 CFR 146.06–11) No substantive change. 176.63 (46 CFR 146.03–34) No substantive change other than adopting IMCO terms. In response to a comment, the "on-deck" stowage situation for hazardous materials, when stowed in a deck house, is being amplified to require that the deck house be vented to the atmosphere by a permanent structural opening such as a door, hatch, companionway, manhole, etc.

176.69 Adopts general requirements for stowage from IMCO regulations. The general stowage requirements, that "under deck" stowage should be used when authorized and that hazardous materials, except those classed as ORM must be stowed in an accessible manner, prompted several comments. It was pointed out that "under deck" stowage is not always desirable for certain hazardous materials and that where "on deck" and "under deck" stowage is authorized the final decision should be left to the master of the vessel. Since the requirement for "under deck" stowage states that this stowage should be used when authorized, the utilization of "on deck" stowage is not prohibited. Several comments indicated that accessible stowage is not always possible on all types of vessels such as container vessels. The requirements to stow all hazardous materials in an accessible manner has been modified to reflect comments received and to recognize specialized vessels.

176.72 Adopts several new handling requirements for hazardous materials designed to help ensure the integrity of the packages during handling. Sets forth general requirements for proper and safe handling of hazardous materials and expands stowage requirements to apply to to all classes of hazardous materials. Several comments requested that the proposed requirement to limit deck loads of hazardous materials to 50% of the deck space be deleted. This requirement is being retained since additional "under deck" stowage is being provided hazardous materials, and since the limitation to 50% of the total deck space is an IMCO recommendation. The wording in this subpart has been modified for those portions that refer to firefighting equipment and the securing of break bulk cargo on deck, as a result of comments received. A comment suggested that only flammable hazardous materials be restricted from stowage within twenty-five feet of an operating or embarkation point of a lifeboat. It is felt that all hazardous materials present an increased hazard at the operating and embarkation points to lifeboats, especially during an emergency situation, therefore, this restriction is adopted as proposed.

176.74 (46 CFR 146.19–35(g) 146.20–19 146.27–20 146.25–40 146.24–30 146.22–5 (b)) No substantive change (176.74(c) is an IMCO requirement).

176.76 (46 CFR 146.07–1 146.07–5 146.07–25 146.07–40 146.08–1(a) 146.08–10) The regulations have been changed to provide for compliance with IMCO container loading requirements including specific requirements for securing the load within a container and consistent intermodal placarding and marking requirements. One comment suggested alternative separation requirements between "reefer" units and containers of flammable liquids and gases. The separation requirement has been modified as a result of the comments received. A comment suggested that where the lading is contained within an intermodal container or vehicle body only that portion of the lading which consists of explosives or other dangerous materials must be entirely contained within the intermodal container or vehicle body without overhang or projection. The proposal is being modified to accommodate this comment. Several comments pointed out that to require "void" spaces to be filled with dunnage when hazardous materials are loaded in containers and vehicles would require the placement of dunnage in spaces created when barrels or other circular packages are loaded within an intermodal container or vehicle body.

This was not the intent of the proposal and as suggested by the comment the requirement to use dunnage is being applied to "slack spaces" in the load. Many comments recommended that the requirement to stow dry cargoes over liquid cargoes should not be a mandatory requirement since consideration should be given to the density of the particular cargoes involved as well as the packaging. This requirement has been modified to provide for situations where judgment would dictate a different stowage situation. Comments received on the weight limitation for portable tanks suggested that the entry in this section be consistent with a similar requirement in § 173.32, and one comment suggested that the maximum gross weight be authorized at 55,000 pounds. The proposal has been modified to incorporate the comments received. Comments received on the carriage of rail cars and highway vehicles by vessels suggested that barges be added as an authorized vessel, however, the proposed definitions for trainships and trailerships would include barges and a specific mention of barges would be unnecessary. The requirement for securing packages within a transport vehicle or intermodal container has been modified to eliminate the need for vertical restraint when shifting of the load has been prevented. Several comments were received which requested the inclusion of Class A Explosives to the requirements governing the transportation of hazardous materials in highway vehicles, railroad vehicles, and intermodal containers.

Class A Explosives were specifically excluded from transportation under the requirements of this section because the existing regulations prohibit the transportation of Class A Explosives in railroad or highway vehicles and intermodal containers without prior approval from the Commandant of the U.S. Coast Guard. The Coast Guard has tasked the Chemical Transportation Industry Advisory Committee with developing regulations for the transportation of Class A Explosives by vessel in railroad or highway vehicles and intermodal containers. These regulations will be issued as a separate rulemaking. One comment requested that the requirement for securing dunnage to the floor of a vehicle or container, when the cargo consist of dense material or heavy packages, be deleted because the requirement was too vague to be enforceable. This requirement is being retained in order to provide guidance with respect to the proper bracing and securing of dense or heavy cargoes within a vehicle or container. The determination of when a cargo is of sufficient density or weight that the dunnage should be secured to the floor will be left to the judgment of the shipper and the Coast Guard Captain of the Port. The guidance provided by this requirement will insure a secure stow for heavy and dense materials. Several wording changes were suggested by comment to this subpart and have been adopted in an effort to maintain clarity.

176.77 New requirements to cover barge carrying vessels. The regulations did not adequately address this form of carriage of hazardous materials as it did not previously exist.

176.78 (46 CFR 146.09–15, 146.20–35, 146.19–70, 146.21–57, 146.22–7, 146.23–13, 146.24–27, 146.25–43, 146.26–35, 146.27–35) No substantive change. Several of the existing sections that have been incorporated in this new section have been modified as they apply to fork-lift trucks as a result of comments received. The definition for an "LP" designated unit

has been changed to agree with the definition of a "G" designated unit with the distinction being the fuel utilized. The section pertaining to the load back rest for fork-lift trucks has been reworded for clarity. The safety standard for the forks has been modified to conform closer to a performance standard. The section referring to tire guards has been reworded to eliminate uncertainty. The section referring to the steering mechanism of fork-lift trucks is not being changed. Although a comment was received to modify this section, as proposed, the section adequately addresses the intended steering mechanism requirements. The section pertaining to truck capacity has been modified in order to avoid confusion. In addition, two other sections in this subpart which refer to the requirement of this section for portable fire extinguishers used during fork-lift truck operations have been revised to better identify the size and type extinguisher and the approval required. The approval, however, is not so specific as to preclude fire extinguishers found on foreign vessels as long as the extinguisher is equivalent.

176.79 (46 CFR 146.09) No substantive change. 176.80 Segregation requirements for hazardous materials based on recommended IMCO provisions.

176.83 (46 CFR 146.20–90, 146.19–40, 146.21–30, 146.22–10, 146.22–15) Adopts IMCO stowage criteria except for explosives. The segregation chart in this section has been modified to correct certain inaccuracies which appeared in the proposal and were pointed out by several comments. Comments received on the segregation term "away from" stated that the term needed to be defined by a limiting distance in order to preclude interpretation of this segregation term. A suggestion of eight feet for "away from" separation is not being adopted. The separation required by this term is being defined as ten feet in order to provide consistency with IMCO recommendations and is being further modified when the cargoes requiring this separation are in containers or vehicles. A comment was received that supported the proposal as it relates to the non-application of segregation requirements for ORM materials. That proposal is adopted by this amendment except for specific requirements for certain materials. A comment was received which suggested that the segregation term "Separate by a complete cargo space or hold from" be qualified by a minimum distance when "on deck" stowage is used. This is not considered necessary since this amendment, as proposed, states that when "on deck" stowage is used for cargoes requiring this segregation that a corresponding logitudinal distance is required for separation. Another comment suggested that UNO compatibility groupings be used for developing segregation for explosives during transportation. This suggestion may be the subject of a future rule-making as it is outside the scope of this rulemaking.

176.88 ((46 CFR 146.08) No substantive change. 176.89 (46 CFR 146.08–40) No substantive change. 176.90 (46 CFR 146.08–45) No substantive change. 176.91 (46 CFR 146.08–45) No substantive change. A comment received on this section suggested that the term "motorboat" requires a definition if the intent of this section is to cover diesel powered craft. This was not the intent. 176.92 (46 CFR 146.08–55). No substantive change. 176.93 (46 CFR 146.08–55 146.08–35(c)) No substantive change. 176.95 (46 CFR 146.10–2 146.10–4) No substantive change. 176.96 (46 CFR 146.10–3) No substantive change. 176.98 (46 CFR 146.10–6) No substantive change. 176.99 (46 CFR 146.10–50 146.10–6) No substantive change. 176.100 (46 CFR 146.20–85 146.20–87) No substantive change except existing 300 pound or less net weight exemption has been deleted to be compatible with 33 CFR 126.17. A comment received indicated that this section would ultimately require four permits for certain movements of Class A Explosives and that the existing regulations require only two in similar circumstances. The proposed regulations are basically the same as the existing requirements and will require one permit for the transportation of Class A Explosives by the water mode except for situations where the specific movement is not authorized by the regulations, then two permits will be required.

176.105 (46 CFR 146.20–31, 146.20–35, 146.20–43, 146.09–12, 146.20–29) No substantive change. 176.110 (46 CFR 146.20–49) No substantive change. 176.115 (46 CFR 146.20–15, 146.20–19) No substantive change. 176.120 (46 CFR 146.20–29) Amended to recognize the use of modern hatch cover designs. 176.125 (46 CFR 146.20–29) No substantive change. A comment to this section stated that this proposal would be too restrictive for the loading of explosives when intermodal containers secured on deck contained only non-regulated cargo. The three foot limitation for deck cargo, over which explosives must pass, is directed to break bulk vessels and not to container vessels. The requirement is based on an existing requirement and is being retained, however, the requirement is being reworded to specifically identify the break bulk vessel in order to avoid interpretation.

Another comment suggested that the "three feet" be deleted and that the height of the hatch coaming or bulwark railing be used as the determining factors for deck loads over which explosives must pass. The requirement is being retained as proposed since the height of the deck cargo is not being restricted to three feet when the height of the hatch coaming or bulwark is higher. However, a limitation of three feet is required when the height of the hatch coaming or bulwark is less than one foot.

176.130 (46 CFR 146.20–37) Comments to this section suggest that vertical restraint should not be required when the shape of the packages, stuffing pattern and bracing prevent shifting of the load. It was not proposed to make a substantive change to this section. However, based on the comments received and satisfactory experience gained, this section has been modified to eliminate vertical restraint requirements where shifting of the load is prevented.

176.135 (46 CFR 146.09–1) No substantive change. 176.138 (46 CFR 146.09–2 146.20–33) No substantive change. Comments to this section suggested that the construction of magazines be based on IMCO requirements. The suggestion is valid and the Coast Guard is considering the incorporation of IMCO recommendations for the transportation of explosives via vessels in a future rulemaking.

176.141 (46 CFR 146.09–3) No substantive change. A comment addressing § 176.138 and this section suggested that the sheathing requirement and the decking requirement be eliminated since the requirement is very costly and may actually serve no real purpose. The requirements are being retained since they are based on safety considerations and elimination cannot be accomplished while providing an equivalent alternative. The comment cited, as example, the military ammunition ships which do not use wood sheathing or decking, however, these vessels are specially designed vessels for the transportation of military explosives. The incorporation of nonsparking metal dunnage as used on the military ammunition ships would be far costlier than the requirements presently required for commercial vessels. Changes to these sections will be a matter of future rulemaking.

176.144 (46 CFR 146.09–4) No substantive change. Comments to this section suggest that the ventilation of magazines can better be accomplished by eliminating the sheathing requirements and incorporating the recommendations of IMCO. This is an existing requirement and is being retained, however, the incorporation of IMCO recommendations for explosives may be a matter of a future rulemaking. 176.147 (46 CFR 146.09–5) No substantive change.

176.150 (46 CFR 146.09–6) No substantive change. Comments suggested clarification of the size limitation placed on portable magazines. The proposed portable magazine size specification limited the stowage of explosives in a portable magazine to 100 cubic feet plus 10%, the 10% being added as an allowance for error on the basic limitation of 100 cubic feet. In response to the comments, the capacity of a portable magazine is limited to no greater than 110 cubic feet. 176.155 (46 CFR 146.20–16) No substantive change. 176.156 (46 CFR 146.20–23) No substantive change. 176.157 (46 CFR 146.20–17) No substantive change. 176.158 (46 CFR 146.20–21) No substantive change. 176.159 (46 CFR 146.20–25) No substantive change.

176.163 (46 CFR 146.09–11, 146.20–37) No substantive change. Two comments were received which stated that grounding need not be required on conveyors constructed of aluminum or other non-sparking material when used for the handling of explosives. This requirement

is being retained since it is an accepted safety measure when working with explosives, is an easy measure to perform, and is based on existing requirements. 176.165 (46 CFR 146.20–39) No substantive change. 176.167 (46 CFR 164.20–41) No substantive change. This section has been modified as a result of comments received to provide for the use of non-sparking tools or tools covered with a non-sparking material. 176.169 (46 CFR 146.20–39) No substantive change. 176.171 (46 CFR 146.20–45) No substantive change. 176.173 (46 CFR 146.20–47) No substantive change. 176.177 (46 CFR 146.20–53 146.20–55 146.20–59 146.20–63 146.20–65 146.20–67 146.20–69 146.20–71 146.20–73 146.20–75 146.20–77 146.20–79 146.20–81 146.20–83) No substantive change except for purposes of enhancing safety, the authorization to use oil or chemical burning lamps or lanterns has been deleted. Several comments were received requesting changes to the requirements for magazine vessels, however, only minor rewording has been made for clarification. The requirements for explosives are not being amended by this rulemaking as it is inappropriate to make such substantive changes without affording interested persons an opportunity to comment.

176.200 (46 CFR 146.24–30 146.24–50) No substantive change. Adopts IMCO criteria for stowage of poison gas away from foodstuffs. 176.205 (46 CFR 146.24–35) No substantive change except for allowing "below deck" stowage of some flammable compressed gases in accordance with IMCO. The only comment to this section suggested that flammable compressed gases be limited to "on deck" when stowed on board a vessel. In consideration of the proposed incorporation of IMCO stowage criteria for these materials and the additional safety considerations required when flammable compressed gases are stowed "under deck" this section is retained as proposed. 176.210 (46 CFR 146.24–30) No substantive change. 176.220 (46 CFR 146.24–65) No substantive change. 176.225 (46 CFR 146.24–60) No substantive change. 176.305 (46 CFR 146.21–35) 146.21–40 146.21–45 146.21–25 146.21–15 146.26–25 146.21–50) No substantive change. 176.315 (46 CFR 146.21–20 146.26–20) No substantive change. Clarification and combines treatment of hazards of combustible and flammable liquids. 176.320 (46 CFR 146.21–25) No substantive change. 176.325 (46 CFR 146.21–55 146.26–15) No substantive change. 176.328 (46 CFR 146.27–30) Comment to this section suggested that when motor vehicles are carried in containers, the container cannot always be open for inspection purooses and that relief from inspection be provided containerized cargo. This comment and others relating to the problem of inspecting containers on board container vessels has been resolved in § 176.39, "Inspection of cargo."

176.329 (46 CFR 146.21–60 146.26–30) This proposed section, which made no substantive changes to existing requirements, has not been adopted. Exemptions for potable spirits, adopted under Docket HM–102 (40 FR 22263, May 22, 1975), are now provided for in § 173.118 (c) of this subchapter.

176.331 Adopted per IMCO. Requires stowage separation of packages (containing flammable liquid) bearing Poison labels from foodstuffs.

176.400 (46 CFR 146.22–15). No substantive change. Comments to this section suggested rewriting the requirements in order to preclude the stowage of oxidizers and organic peroxides together. This section is retained unchanged since the Segregation Table § 176.86(b), stipulates that these materials must be "separate from" each other. This segregation term requires stowage in separate holds.

176.405 (46 CFR 146.22–20) No substantive change. 176.410 (46 CFR 146.22–15, 146.22–30, 146.20–23, 146.22–15) No substantive change. Comments to this section suggested that the first retardant bulkhead requirement be eliminated when ammonium nitrate or nitro carbo nitrate are stowed within the hold with explosives and the recommendations of IMCO be adopted for this stowage situation. This requirement is being retained since major changes to the regulations involving the transportation of explosives will be considered under a separate rulemaking.

176.415 (46 CFR 146.22–30, 146.22–40) No substantive change. 176.419 Adopted per IMCO. Requires stowage separation of packages (containing flammable solids or oxidizers) bearing Poison labels from foodstuffs.

176.600 (46 CFR 146.25–45) Changed to adopt IMCO stowage criteria. Requirements for separation of foodstuffs and Poison A and Poison B materials. Comment to this section requested that "separate from" stowage be provided to poisons from materials known to be for food contact application as well as from foodstuffs. This requested additional requirement is not being adopted because it would create an enormous area for interpretation and would be practically unenforceable.

176.605 (46 CFR 146.25–50). No substantive change. 176.700 (46 CFR 146.19–35) No substantive change. 176.710 (46 CFR 146.19–50, 146.02–13(b)) No substantive change. In response to a comment, a cross reference has been added for reporting requirements to § 171.16. 176.715 (46 CFR 146.19–50) No substantive change. 176.800 (46 CFR 146.23–10, 146.23–15, 146.23–25) No substantive change. 176.805 (46 CFR 146.23–20) No substantive change.

176.900 (46 CFR 146.27–25) No substantive change except specifying what "adequately dunnaged off the bulkhead" means. Specific requirements for cotton have been deleted because of the change in hazard classes of cotton to a flammable solid. Several wording changes have been made to this section in response to comments received. The paragraph which provides for a wooden bulkhead, when cotton or other fibers are stowed adjacent to a boundry bulkhead subject to heat, has been modified to provide for bulkheads which are permanently insulated. The paragraph which provides for particular fixed fire smothering equipment has been modified to allow other approved fixed fire smothering systems. The paragraph requiring tarpaulins to be fitted over hatch openings, so as to provide a tight hold, has been modified to recognize hatch covers which when fitted in place provide the required tighthold.

176.901 New section (part of proposed § 176.900) setting forth requirements for stowage of cotton or fibers with resin or pitch. 176.902 New section (part of proposed § 176.900) setting forth the requirements for stowage of cotton or fibers with vegetable, animal, or resin oil. 176.903 New section (part of proposed § 176.900) setting forth requirements for stowage of cotton or fibers with coal.

176.904 New section (part of proposed § 176.900) setting forth requirements for stowage of cotton or fibers with synthetic nitrate of soda.

176.905 (46 CFR 146.27–30) Comment to this section suggested that when motor vehicles are carried in containers, the container cannot always be open for inspection purposes and that relief from inspection be provided containerized cargo. This comment and others relating to the problem of inspecting containers on board container vessels has been resolved in § 176.39, *Inspection of cargo.*

176.910 New section setting forth the requirements for the transportation of ORM–D materials.

Sections of 46 CFR dealing with the requirements for the transportation of limited quantities of hazardous materials do not appear in Part 176 because these provisions are found in Part 173.

Part 177—Carriage By Public Highway

This part deals with the requirements for highway carriers engaged in the transport of hazardous materials. Comments received are addressed in a manner that will follow the format of Part 177.

177.800 through 177.813 No substantive change.

177.815 Deletion of certain duplicative requirements regarding labeling which are set forth in Part 173.

177.816 Deletion of a duplicative marking requirement which is set forth in Part 173.

177.817 Several comments expressed opposition to the prohibition against carriers accepting for transport a hazardous material accompanied by an improperly prepared shipping paper. Application of such a prohibition, they stated, is difficult because of the complexity of the shipper paper requirements and the problem of educating the drivers so that they are aware of these requirements. They further stated that burden for compliance with shipping paper requirements should rest with the shipper. The Bureau agrees that shippers must be responsible for properly completing shipping papers, and the regulations so re-

quire. However, in order for the motor carrier industry to comply with carrier operating requirements, such as placarding, carrier personnel must be able to recognize when hazardous materials are being offered for transportation, what class of material is being offered, and in what quantities. This information must be obtained from the shipping papers at the time the shipment is tendered to the carrier in order for the carrier to initiate compliance with the carrier operating requirements. Therefore, a modified version of the proposal has been retained in this amendment.

Several comments objected to the proposed provision that hazardous materials be listed first on the carrier's shipping documents which cover both hazardous and non-hazardous materials (by reference to Subpart C of Part 172). Since carrier shipping documents are usually prepared in the same order as the shipper's original shipping paper, and the shipper must list hazardous materials first, the Bureau does not agree that this proposal will be disruptive to the motor carrier industry, or that it will impose on that industry any new burdens. Therefore, the proposed change with revised language is being adopted by this amendment.

In the notice, the Board proposed to clarify the possession requirements for shipping papers carried by a driver. Included in the proposal was a recommendation that shipping papers be placed in a pouch or other device that is mounted on the inside of the door to the left of the driver's position. The purpose of this proposal was to standardize shipping paper locations so that emergency response personnel would be better able to find such documents when the need arises. The industry's opinion was that the pouch could interfere with the driver's ability to use the various controls on the vehicle and would be an irritation to the driver's left leg as he actuated the clutch pedal. They also expressed an objection on the basis of the cost of purchasing and installing the pouches. In addition, the motor carrier industry objected to the proposal that the shipping paper be on the driver's person when he is away from the vehicle. They cited possible loss or destruction of the paper due to this additional handling, and the problem emergency response personnel would have in locating a driver should an incident occur at the vehicle. The Bureau believes the motor carrier industry's comments have some merit, especially those comments relating to the problem of locating a driver when he is away from his vehicle. While the Bureau still believes there is a definite need for standardization of shipping paper location on a motor vehicle while hazardous materials are in transit, it does not want the location requirements to be so restrictive as to not allow motor carriers any choice of location for the documents. Therefore this amendment leaves the carrier with some discretion on choice of location, while maintaining a meaningful degree standardization.

It was also proposed that hazardous materials shipping papers, when carried with other shipping papers, be arranged so that they will appear first upon examination of the papers. The motor carrier industry stated that such a requirement would be disruptive to the normal practice of arranging shipping papers in the order in which deliveries are to be made. As an alternative, the industry suggested that the Department list alternative systems, allowing carriers the choice of selecting the system most suitable to their operation. The Bureau agrees and this amendment provides accordingly.

It was also suggested that the Department should "* * * establish a *Recommended Practice urging* motor carriers to establish systems that will provide quick access to hazardous materials shipping papers." (Emphasis added.) Since the shipping papers are often the only means of specifically identifying the hazardous materials, these documents must be readily available and identifiable should incidents, requiring their immediate examination, occur during transportation. Not requiring an identification system could mislead emergency response personnel, upon rapid examination of shipping documents, into believing hazardous materials are not on a vehicle. For this reason, the Bureau does not agree that an identification system for shipping papers in the driver's possession should only be recommended.

To insure that a line of communication is established between a driver and emergency response personnel, this amendment requires that shipping papers be readily available to emergency response personnel. Such action was deemed necessary in order to enhance the safety of emergency response personnel and the general public.

177.819, 177.821 and 177.822 No substantive change.

177.823 The Board proposed two conditions where in an emergency a vehicle containing hazardous materials could be moved without the required markings and placards. Many comments suggested that the alternatives proposed were too restrictive and could prevent the immediate movement of a vehicle as necessary for handling of an emergency. The Bureau agrees and has added a third provision under which a vehicle could be moved when necessary, in an emergency, to protect life or property.

177.824 & 177.834 through 177.840 No substantive change.

177.841 In the preamble to Notice 73-9, the Board explained the proposed change to paragraph (d) in § 177.841 regarding the loading of poisons with food stuffs, and invited comments as to whether or not there should be some relaxation of the restriction and, if so, how it should be accomplished. Many comments suggested that the overpack unit approved under Special Permit No. 6869 should be adopted as a means of accomplishing some relaxation of the restriction. In addition, the American Trucking Associations, Inc. (ATA) proposed a "pallet overpak" as a means of safely loading poisons in the same vehicle with foodstuffs.

The Bureau does not believe that sufficient experience data has been obtained at this time for use of the Special Permit No. 6869 overpack to justify its adoption under § 177.841. The Bureau will continue to monitor experience data obtained from holders of the permit as well as experience gained from the segregation requirements recognized by the United Nations' Committee of Experts on the Transport of Dangerous Goods. As additional experience data is obtained, the Bureau will consider reopening rule making on the subject. Also, the Bureau will consider permitting use of the "pallet overpak" suggested by ATA if submitted under the prescribed exemption procedures established by the Department.

177.842, 177.843, 177.848, 177.853 through 177.861 & 177.870 No substantive change.

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1. In Part 171, the Part heading and the Table of Sections are revised to read as follows:

PART 171—GENERAL INFORMATION, REGULATIONS, AND DEFINITIONS

Sec.

171.1 Purpose and scope.
171.2 General transportation requirements.
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171.12 Import and export shipments.
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171.15 Immediate notice of certain hazardous materials incidents.
171.16 Detailed hazardous materials incident reports.

AUTHORITY: 18 U.S.C. 834, 46 U.S.C. 170(7), 49 U.S.C. 1472(h)(1), 49 CFR 1.53(f)–(h).

2. §§ 171.1 and 171.2 are revised to read as follows:

§ 171.1 Purpose and scope.

This subchapter prescribes the requirements of the Department of Transportation governing the transportation of hazardous materials in commerce.

§ 171.2 General transportation requirements.

(a) Except as provided in § 171.12, no person may offer or accept a hazardous material for transportation in commerce within the United States unless that material is properly classed, described, packaged, marked, labeled, and in the condition for shipment as required by this subchapter.

(b) Except as provided in § 171.12, no person may transport a hazardous material in commerce within the United States unless that material is handled and transported in accordance with this subchapter.

3. In § 171.7 paragraphs (c) (23), (24), and (25); (d) (17), (18), and (19), and paragraph (e) are added to read as follows:

§ 171.7 Matter incorporated by reference.

* * * * *

(c) * * *

(23) Inter-governmental Maritime Consultative Organization, 101–104 Piccadilly, London, WIV OAE, England.

(24) International Air Transport Association, P.O. Box 315, 1215 Geneva 15 Switzerland.

(25) Uniform Classification Committee, 222 South Riverside Plaza, Chicago, Ill. 60606.

(d) * * *

(17) "IATA" Restricted Articles Regulations, 18th edition."

(18) "International Maritime Dangerous Goods Code," (IMCO code) Volumes I, II, and III.

(19) "Uniform Freight Classification 11."

(e) Matters referenced by footnote are included as part of the regulations of this subchapter.

4. § 171.8 is revised to read as follows:

§ 171.8 Definitions and abbreviations.

In this subchapter,

"Approved" means approval issued or recognized by the Department unless otherwise specifically indicated in this subchapter.

"Away from" See § 176.83.

"Barge" means a non-selfpropelled vessel that does not carry any persons while under way.

"Bottle" means a container having a neck of relatively smaller cross section than the body and an opening capable of holding a closure for retention of the contents.

"Break-bulk" means packages of hazardous materials that are handled individually, palletized, or unitized for purposes of transportation as opposed to bulk and containerized freight.

"Bureau of Explosives" means the Bureau of Explosives (BOE) of the Association of American Railroads.

"C" means Celsius or Centigrade.

"Captain of the Port" means the Officer of the Coast Guard, under the command of a District Commander, so designated by the Commandant for the purpose of giving immediate direction to Coast Guard law enforcement activities within his assigned area or, with respect to remaining areas in his District not assigned to officers designated by the Commandant, the District Commander.

"Carfloat" means a vessel that operates on a short run on an irregular basis and serves one or more points in a port area as an extension of a rail line or highway over water, and does not operate in ocean, coastwise, or ferry service.

"Cargo-only aircraft" means an aircraft that is used to transport cargo and is not engaged in carrying passengers.

"Cargo tank" means any tank permanently attached to or forming a part of any motor vehicle or any bulk liquid or compressed gas packaging not permanently attached to any motor vehicle which by reason of its size, construction, or attachment to a motor vehicle, is loaded or unloaded without being removed from the motor vehicle.

"Cargo vessel" means: (1) Any vessel other than a passenger vessel or a barge; and

(2) Any ferry being operated under authority of a change of character certificate issued by a Coast Guard Officer-in-Charge, Marine Inspection.

"Carrier" means a person engaged in the transportation of passengers or property by: (1) Land or water, as a common, contract, or private carrier, or

(2) Civil aircraft.

"CC" means closed-cup.

"Character of vessel" means the type of service in which the vessel is engaged at the time of carriage of a hazardous material.

"Civil aircraft" means aircraft other than public aircraft.

"Class A explosives" See § 173.53.

"Class B explosives" See § 173.88.

"Class C explosives" See § 173.100.

"COFC" means container-on-flat-car.

"Combustible liquid" See § 173.115.

"Compressed gas" See § 173.300.

"Consumer commodity" means a material that is packaged and distributed for sale through retail sales agencies or instrumentalities for consumption by individuals for purposes of personal care or household use. This term also includes drugs and medicines.

"Containership" means a cargo vessel designed and constructed to transport, within specifically designed cells, portable tanks and freight containers which are lifted on and off with their contents intact.

"Corrosive material" See § 173.240.

"Crewmember" means a person assigned to perform duty in an aircraft during flight time.

"Cylinder" means a pressure vessel designed for pressures higher than 40 psia and having a circular cross section. It does not include a portable tank, multi-unit tank car tank, cargo tank, or tank car.

"District Commander" means the District Commander of the Coast Guard, or his authorized representative, who has jurisdiction in the particular geographical area.

"DOD" means the U.S. Department of Defense.

"Engine" means a locomotive propelled by any form of energy and used by a railroad.

"Etiologic agent" See § 173.386.

"Ferry vessel" means a vessel which is limited in its use to the carriage of deck passengers or vehicles or both, operates on a short run on a frequent schedule between two points over the most direct water route, other than in ocean or coastwise service, and is offered as a public service of a type normally attributed to a bridge or tunnel.

"Flammable gas" See § 173.300(b).

"Flammable liquid" See 173.115(a)(1).

"Flammable solid" See § 173.150.

"Flash point" means the minimum temperature at which a substance gives off flammable vapors which in contact with spark or flame will ignite. For liquids, see § 173.115 and for solids, see § 173.150.

"Freight container" means a reusable container having a volume of 64 cubic feet or more, designed and constructed to permit being lifted with its contents intact and intended primarily for containment of packages (in unit form) during transportation.

"Fuel tank" means a tank other than a cargo tank, used to transport flammable or combustible liquid, or compressed gas for the purpose of supplying fuel for propulsion of the transport vehicle to which it is attached, or for the operation of other equipment on the transport vehicle.

"Full load" applies only to radioactive materials. See § 173.389 of this subchapter for its definition.

"Gross weight" means the weight of a packaging plus the weight of its contents.

"Hazardous material" means a substance or material which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated.

"Hermetically sealed" means closed by fusion, gasketing, crimping, or equivalent means so that no gas or vapor can enter or escape.

"IATA" means International Air Transport Association.

"IMCO" means International Maritime Consultative Organization.

"Intermodal container" means a freight container designed and constructed to permit it to be used interchangeably in two or more modes of transport.

"Irritating material" See § 173.381.

"Limited quantity" means the maximum amount of a hazardous material; as specified in those sections applicable to the particular hazard class, for which there are specific exceptions from the requirements of this subchapter. See §§ 173.118, 173.118a, 173.153, 173.244, 173.306, 173.345 and 173.364.

"Magnetic materials" See § 173.1020.

"Magazine vessel" means a vessel used for the receiving, storing, or dispensing of explosives.

"Marking" means applying the descriptive name, instructions, cautions, weight, or specification marks or combination thereof required by this subchapter to be placed upon outside containers of hazardous materials.

"Mixture" means a material composed of more than one chemical compound or element.

"Mode" means of the following transportation methods; rail, highway, air, or water.

"Motor vehicle" includes a vehicle, machine, tractor, trailer, or semitrailer, or any combination thereof, propelled or drawn by mechanical power and used upon the highways in the transportation of passengers or property. It does not include a vehicle, locomotive, or car operated exclusively on a rail or rails, or a

trolley bus operated by electric power derived from a fixed overhead wire, furnishing local passenger transportation similar to street-railway service.

"Name of contents" means the proper shipping name as specified in § 172.101.

"Navigable waters" means the navigable waters of the United States, its territories, and possessions, but does not include the navigable waters of the Panama Canal Zone.

"Net weight" means a measure of weight referring only to the contents of a package, and does not include the weight of any packaging material.

"N.O.S." means not otherwise specified.

"NRC (non-reusable container)" means a container whose reuse is restricted in accordance with the provisions of § 173.28.

"Occupied caboose" means a rail car used to transport non-passenger personnel.

"Officer in Charge, Marine Inspection" means a person from the civilian or military branch of the Coast Guard designated as such by the Commandant and who under the supervision and direction of the Coast Guard District Commander is in charge of a designated inspection zone for the performance of duties with respect to the enforcement and administration of Title 52, Revised Statutes, acts amendatory thereof or supplemental thereto, rules and regulations thereunder, and the inspection required thereby.

"Operator" means a person who controls the use of an aircraft, vessel, or vehicle.

"Organic peroxide" See § 173.151.

"ORM" means Other Regulated Materials.

"Outside container" means the outermost enclosure used in transporting a hazardous material other than a freight container.

"Overpack" means an enclosure not intended for reuse that is used by a single consignor to consolidate two or more packages for convenience in handling.

"Oxidizer" or "Oxidizing material" See § 173.151.

"Package" or "Outside Package" means a packaging plus its contents.

"Packaging" means the assembly of one or more containers and any other components necessary to assure compliance with the minimum packaging requirements of this subchapter and includes containers (other than freight containers or overpacks), portable tanks, cargo tanks, tank cars, and multi-unit tank car tanks.

"Passenger" (With respect to vessels and for the purposes of Part 176 only) means a person being carried on a vessel other than—

(1) The owner or his representative,

(2) The operator;

(3) A bona fide member of the crew engaged in the business of the vessel who has contributed no consideration for his carriage and who is paid for his services; or

(4) A guest who has not contributed any consideration directly or indirectly for his carriage.

"Passenger-carrying aircraft" means an aircraft that carries any person other than a crewmember, company employee, an authorized representative of the United States, or a person accompanying the shipment.

"Passenger vessel" means—(1) A vessel subject to any of the requirements of the International Convention for the Safety of Life at Sea, 1960, which carries more than 12 passengers;

(2) A cargo vessel documented under the laws of the United States and not subject to the Convention, which carries more than 16 passengers;

(3) A cargo vessel of any foreign nation that extends reciprocal privileges and is not subject to the Convention and which carries more than 16 passengers; and

(4) A vessel engaged in a ferry operation and which carries passengers.

"Person" means an individual, firm, co-partnership, corporation, company, association, or joint-stock association, and includes any trustee, receiver, assignee, or personal representative thereof.

"Placarded car" means a car which is placarded in accordance with the requirements of Part 172 of this subchapter.

"Poison A" See § 173.326.

"Poison B" See § 173.343.

"Portable tank" means any packaging (except a cylinder having a 1000-pound or less water capacity) over 110 U.S. gallons capacity and designed primarily to be loaded into or on or temporarily attached to a transport vehicle or ship, and equipped with skids, mounting, or accessories to facilitate handling of the tank by mechanical means. It does not include any cargo tank, tank car tank, or tank of the DOT–106A or 110A type.

"Private track" or "Private siding" means track located outside of a carrier's right-of-way, yard, or terminals where the carrier does not own the rails, ties, roadbed, or right-of-way and includes track or portion of track which is devoted to the purpose of its user either by lease or written agreement, in which case the lease or written agreement is considered equivalent to ownership.

"Proper shipping name" means the name of the hazardous material shown in Roman print (not italics) in § 172.101 of this subchapter.

"P.s.i.a. or psia" means pounds per square inch absolute.

"P.s.i.g. or psig" means pounds per square inch gauge.

"Public aircraft" means an aircraft used only in the service of a government or political subdivision. It does not include a government-owned aircraft engaged in carrying passengers or property for commercial purposes.

"Public vessel" means a vessel used in the service of a government or a political subdivision. It does not include a government-owned vessel engaged in carrying passengers or property for commercial purposes.

"Pyrophoric liquid" See § 173.115.

"Pyrophoric solid" See § 173.150.

"Radioactive materials" See § 173.389.

"Railroad" means a person engaged in transportation by rail.

"Rail freight car" means a car designed to carry freight or non-passenger personnel by rail, and includes a box car, gondola car, hopper car, tank car, and occupied caboose.

"Separated by a complete hold or compartment from" See § 176.83.

"Separated from" See § 176.83.

"Separated longitudinally by a complete hold or compartment from" See § 176.83.

"Sheathing" means a covering consisting of a smooth layer of wood placed over metal and secured to prevent any movement.

"Shipping paper" means a shipping order, bill of lading, manifest or other shipping document serving a similar purpose and containing the information required by §§ 172.202 and 172.203.

"STC (single-trip container)" means a container that may be used for only a single shipment of hazardous materials except as provided in § 173.28.

"Solution" means any homogeneous liquid mixture of two or more chemical compounds or elements that will not undergo any segregation under conditions normal to transportation.

"Spontaneously combustible material (solid)" means a solid substance (including sludges and pastes) which may undergo spontaneous heating or self-ignition under conditions normally incident to transportation or which may upon contact with the atmosphere undergo an increase in temperature and ignite.

"Stowage" means the act of placing hazardous materials on board a vessel.

"Strong outside container" means the outermost enclosure which provides protection against the unintentional release of its contents under conditions normally incident to transportation.

"Technical name" means a recognized chemical name currently used in scientific and technical handbooks, journals, and texts.

"TOFC" means trailer-on-flat-car.

"Trailership" means a vessel other than a carfloat, specifically equipped to handle highway vehicles, and fitted with installed securing devices to tie down each vehicle.

"Train" means one or more engines coupled with one or more rail cars, except during switching operations or where the operation is that of classifying and assembling rail cars within a railroad yard for the purpose of making or breaking up trains.

"Trainship" means a vessel other than a rail car ferry or carfloat, specifically equipped to transport railroad vehicles, and fitted with installed securing devices to tie down each vehicle.

"Transport vehicle" means a motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (trailer, railroad freight car, etc.) is a separate transport vehicle.

"UFC" means Uniform Freight Classification.

"Vessel" includes every description of watercraft, used or capable of being used as a means of transportation on the water.

"Viscous liquid" means a liquid material which has a measured viscosity in excess of 2500 centistokes at 25° C (77° F°.) when determined in accordance with the procedures specified in ASTM Method D 445–72 "Kinematic Viscosity of Transparent and Opaque Liquids (and the Calculation of Dynamic Viscosity)" or ASTM Method D 1200–70 "Viscosity of Paints, Varnishes, and Lacquers by Ford Viscosity Corp."

"Volatility" refers to the relative rate of evaporation of materials to assume the vapor state.

"Water reactive material (solid)" means any solid substance (including sludges and pastes) which, by interaction with water, is likely to become spontaneously flammable or to give off flammable or toxic gases in dangerous quantities.

"Water resistant" means having a degree of resistance to permeability by and damage caused by water in liquid form.

"W.T." means watertight.

5. § 171.9 is revised to read as follows:

§ 171.9 Rules of construction.

(a) In this subchapter, unless the contexts requires otherwise: (1) Words imparting the singular include the plural;

(2) Words imparting the plural include the singular; and;

(3) Words imparting the masculine gender include the feminine;

(b) In this subchapter, the word: (1) "Shall" is used in an imperative sense;

(2) "Must" is used in an imperative sense;

(3) "Should" is used in a recommendatory sense;

(4) "May" is used in a permissive sense to state authority or permission to do the act described, and the words "no person may * * *" or "a person may not * * *" means that no person is required, authorized, or permitted to the act described; and

(5) "Includes" is used as a word of inclusion not limitation.

6. In § 171.11 paragraph (a) is amended by changing the word "chapter" to read "subchapter" and paragraph (c) is deleted. As revised § 171.11 reads as follows:

§ 171.11 Transportation by carriers by water and by rail.

(a) When the transportation of a shipment involves movement by carrier by water, the applicable provisions of Parts 100–189 of this subchapter must be observed by the shipper.

(b) When the transportation of a shipment involves movement by a carrier by rail, the applicable provisions of Parts 100–189 of this subchapter must be observed by the shipper.

7. § 171.12 is revised to read as follows:

§ 171.12 Import and export shipments.

(a) Except in the case of a shipment from Canada conforming to § 173.8, each person importing a hazardous material into the United States shall provide the shipper and the forwarding agent at the place of entry into the United States timely and complete information as to the requirements of this subchapter that will apply to the shipment of the material within the United States. The shipper, directly or through the forwarding agent at the place of entry, shall provide the initial carrier in the United States the certificate of compliance required by § 172.204. The carrier may not accept the material for transportation unless the required certification is provided.

(b) The requirements of § 171.2 with respect to classification and labeling notwithstanding, a hazardous material which is classed and labeled in accordance with the IMCO Code and being imported into or exported from the United States or passing through the United States in the course of being shipped between places outside the United States may be offered and accepted for transportation and transported within the United States if it is otherwise offered, accepted, and transported in accordance with this subchapter.

(c) The requirements of § 171.2 with respect to specification identification markings on packages notwithstanding, a package of hazardous materials (other than a compressed gas cylinder or a package of more than 110 gallons capacity) being imported into or exported from the United States or passing through the United States in the course of being shipped between places outside the United States may be offered and accepted for transportation and transported within the United States if the package specification identification markings required by Part 178 are clearly and legibly displayed on decals or tags securely affixed to the package, and the package is otherwise offered, accepted, and transported in accordance with this subchapter.

(d) Section 171.2 notwithstanding, a hazardous material being imported into or exported from the United States or passing through the United States in the course of being shipped between places outside the United States may be offered and accepted for transportation and transported by motor vehicle or vessel within a single port area (including contiguous harbors) if the requirements of Subparts C, E, and F of Part 172 of this subchapter pertaining to shipping papers, labeling and placarding, respectively, are met.

8. Part 172 is revised to read as follows:

PART 172—HAZARDOUS MATERIALS TABLE AND HAZARDOUS MATERIALS COMMUNICATIONS REGULATIONS

Subpart A—General

Sec.
172.1 Purpose and scope.
172.3 Applicability.

Subpart B—Hazardous Materials Table, Their Description, Proper Shipping Name, Class, Label, Packaging, and Other Requirements

Sec.
172.100 Use of the table.
172.101 Hazardous materials table.

Subpart C—Shipping Papers

172.200 General shipping paper requirements.
172.201 General entries.
172.202 Description of hazardous material on shipping papers.
172.203 Additional description requirements.
172.204 Shipper's certification.

Subpart D—Marking

172.300 General marking requirements.
172.302 Export shipments by water.
172.304 Marking specifications.
172.306 Consignee's name and address.
172.308 Authorized abbreviations.
172.310 Radioactive materials.
172.312 Liquid hazardous materials.
172.316 Outside packagings containing a material classed as ORM.
172.326 Portable tanks.
172.328 Cargo tanks.
172.330 Tank cars.

Subpart E—Labeling

172.400 General labeling requirements.
172.401 Prohibited labeling.
172.402 Additional labeling requirements.
172.403 Radioactive material.
172.404 Labels for mixed and consolidated packaging.
172.405 Authorized label modifications.
172.406 Placement of labels.
172.407 Label specifications.
172.411 EXPLOSIVE A, EXPLOSIVE B, AND EXPLOSIVE C labels.
172.415 NON-FLAMMABLE GAS label.
172.416 POISON GAS label.
172.417 FLAMMABLE GAS label.
172.419 FLAMMABLE LIQUID label.
172.420 FLAMMABLE SOLID label.
172.422 SPONTANEOUSLY COMBUSTIBLE label.
172.423 DANGEROUS WHEN WET label.
172.426 OXIDIZER label.
172.427 ORGANIC PEROXIDE label.
172.430 POISON label.
172.432 IRRITANT label.
172.436 RADIOACTIVE WHITE-I label.
172.438 RADIOACTIVE YELLOW-II label.
172.440 RADIOACTIVE YELLOW-III label.
172.442 CORROSIVE label.
172.444 ETIOLOGIC AGENT label.
172.446 MAGNETIZED MATERIAL label.
172.448 CARGO AIRCRAFT ONLY label.
172.450 EMPTY label.

Subpart F—Placarding

172.500 Applicability of placarding requirements.
172.502 Prohibited placarding.
172.504 General placarding requirements.
172.506 Providing and affixing placards: Highway.
172.508 Providing and affixing placards: Rail.
172.510 Special placarding provisions: Rail.
172.512 Freight container.
172.514 Cargo tanks and portable tanks.
172.516 Visibility and display of placards.
172.519 General specifications for placards.
172.521 DANGEROUS placard.
172.522 EXPLOSIVES A placard.
172.524 EXPLOSIVES B placard.
172.525 Standard requirements for the EMPTY placards.
172.527 Background requirements for certain placards on rail cars.
172.528 NON-FLAMMABLE GAS placard.
172.530 OXYGEN placard.

Sec.
172.532 FLAMMABLE GAS placard.
172.536 CHLORINE placard.
172.540 POISON GAS placard.
172.542 FLAMMABLE placard and modification.
172.544 COMBUSTIBLE placard and modification.
172.546 FLAMMABLE SOLID placard.
172.548 FLAMMABLE SOLID placard.
172.550 OXIDIZER placard.
172.552 ORGANIC PEROXIDE placard.
172.554 POISON placard.
172.556 RADIOACTIVE placard.
172.558 CORROSIVE placard.

APPENDIX A—Specifications for colors.
APPENDIX B—Dimensional specifications for placards.
APPENDIX C—Dimensional specifications for placard holder.

AUTHORITY: 18 U.S.C. 834, 46 U.S.C. 170(7), 49 U.S.C. 1472(h)(1), 49 CFR 1.53(f)–(h).

Subpart A—General

§ 172.1 Purpose and scope.

This Part lists and classifies those materials which the Department of Transportation has designated as hazardous materials for purposes of transportation and prescribes the requirements for shipping papers, package marking, labeling, and transport vehicle placarding applicable to the shipment and transportation of those hazardous materials.

§ 172.3 Applicability.

(a) This Part applies to—(1) Each person who offers a hazardous material for transportation, and

(2) Each carrier by air, highway, rail, or water who transports a hazardous material.

Subpart B—Table of Hazardous Materials, Their Description, Proper Shipping Name, Class, Label, Packaging, and Other Requirements

§ 172.100 Purpose and use of the table.

(a) The table set forth in § 172.101 constitutes a designation of the materials listed therein as hazardous materials for purposes of the transportation of those materials in commerce. In addition, it classifies and specifies requirements and references other requirements set forth elsewhere in this subchapter pertaining to the labeling, packaging and transportation of those materials.

(b) Column 1 contains three symbols: *, A, and W. (1) *: An asterisk before a proper shipping name means that the material described in column 2 may or may not be regulated under the class shown depending on whether or not the commodity meets the definition of the hazard class listed for that entry. If the commodity does not meet the definition of the class stated, the shipper shall determine whether or not the material meets the definition of any other hazard class, and shall prepare the material for shipment in compliance with the requirements of that class. When a proper shipping name is preceded by an asterisk, this name should be used only for materials meeting the definition of the hazard class(es) listed for that name.

(2) A: Except as provided in § 173.501, the symbol "A" before the shipping name means that the material described in column 2 is subject to the requirements of this subchapter only for transportation by aircraft.

(3) W: Except as provided in § 173.501, the symbol "W" before the shipping name means that the material described in column 2 is subject to the requirements of this subchapter only for transportation by vessel.

(c) Column 2 lists the proper shipping name of those materials which are designated as hazardous materials. Proper shipping names are limited to those shown in Roman type (not italics). In the selection of a proper shipping name to describe a particular material, if the correct technical name of that material is not shown, or is not appropriate, selection must be made from the general descriptions or n.o.s. entries corresponding to the specific hazard class of the material being shipped. The name that more appropriately describes the commodity must be used, i.e., an alcohol must be shipped as an alcohol n.o.s. rather than a flammable liquid n.o.s. unless the technical name of the alcohol is listed (methyl alcohol). Some mixtures may be more aptly described by their application such as: "Compound, cleaning" or "Compound, rust removing," rather than "Corrosive liquid n.o.s." For materials that meet the definition of more than one hazard class, the hazard class must be determined by using the precedence given in § 173.2 of this subchapter. If it is believed that an adequate description of a material is not given in § 172.101, the Office of Hazardous Materials Operations should be contacted for clarification.

(1) Shipping names may be used in the singular or plural in either capital or lower case letters.

(2) The words in italics are not part of the proper shipping name but may be used in addition to the proper shipping name. The word "or" in italics indicates that any one term in the sequence may be used as the proper shipping name as appropriate. Only one name should be used.

(3) The abbreviation "n.o.i." which means "not otherwise indexed" or "n.o.i.b.n." which means "not otherwise indexed by name" may be used interchangeably with "n.o.s."

(4) When qualifying words are used as part of the proper shipping name, their sequence on package markings and shipping paper descriptions is optional.

(d) Column 3 contains a designation of the hazard class corresponding to each proper shipping name or the word "Forbidden" if the hazardous materials is one that may not be offered or accepted for transportation.

(e) Column 4 specifies the labels required to be applied to each outside package. In addition, any hazardous material not classed as a poison that meets the definition of a Poison B as specified in § 173.343 must have the POISON label applied to the outside package in addition to the label corresponding to the hazard class of the material. Any flammable solid that is water reactive must have the DANGEROUS WHEN WET label applied to the outside package in addition to the FLAMMABLE SOLID label.

(f) Column 5 references the exceptions authorized in the shipment of limited quantities of a hazardous material.

(g) Column 6 references the applicable packaging sections of Part 173.

(h) Column 7 indicates the maximum quantity authorized in one package for air transportation.

(1) Column 7(a) specifies the maximum quantity permitted in one package for passenger-carrying aircraft. For air transportation, any material forbidden on passenger-carrying aircraft but permitted on cargo aircraft, or which exceeds the maximum quantity authorized on passenger-carrying aircraft, must be shipped by cargo-only aircraft and bear the CARGO AIRCRAFT ONLY label as described in § 172.448.

(2) Column 7(b) lists the maximum quantity for one outside package on cargo aircraft. Packaging must bear the CARGO AIRCRAFT ONLY label when the quantity of hazardous material exceeds that authorized on passenger-carrying aircraft, or is forbidden on passenger-carrying aircraft.

(i) Column 8 specifies each of the authorized locations on board cargo vessels and passenger vessels and certain additional requirements for shipments of each listed hazardous material. Section 176.63 of this subchapter sets forth the physical requirements for each of the authorized locations listed in Column 8. (For bulk shipments by water see 46 CFR Parts 30 to 40, 48, 64, 70, 98, 148, 151, and 154.)

(1) "1" means the material may be stowed "on deck" subject to the requirements of § 176.63(b) of this subchapter. When both "on deck" and "under deck" are authorized, "under deck" should be used if it is available.

(2) "2" means the material may be stowed "under deck" in a compartment or hold subject to the requirements of § 176.63(c). When both "on deck" and "under deck" are authorized, "under deck" should be used if it is available.

(3) "3" means the material may be stowed "under deck away from heat" in a ventilated compartment or hold subject to the requirements of § 176.63(d) of this subchapter.

(4) "4" means the material is authorized to be transported in only the limited quantities specified in the CFR section listed in Column 5 and subject to the stowage requirements specified for a cargo vessel for the same material.

(5) "5" means the material is forbidden and may not be offered or accepted for transportation.

(6) "6" means the material is authorized to be transported in a magazine subject to the requirements of §§ 176.135 through 176.144 of this subchapter.

§172.101 Hazardous Materials Table

(1) */W/A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package: (a) Passenger carrying aircraft	(7) Maximum quantity in one package: (b) Cargo only aircraft	(8) Water shipments: (a) Cargo vessel	(8) Water shipments: (b) Passenger vessel	(8) Water shipments: (c) Other requirements
	Accumulator, pressurized (*pneumatic or hydraulic*), *containing nonflammable gas*	Nonflammable gas	Nonflammable gas	173.306				1,2	1,2	
	Acetal	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Acetaldehyde (*ethyl aldehyde*)	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,3	5	
A	Acetaldehyde ammonia	ORM-A	None	173.505	173.510					
*	Acetic acid (*aqueous solution*)	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	Stow separate from nitric acid or oxidizing materials
	Acetic acid, glacial	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	Stow separate from nitric acid or oxidizing materials. Segregation same as for flammable liquids
	Acetic anhydride	Corrosive material	Corrosive	173.244	173.245	1 quart	1 gallon	1,2	1,2	
	Acetone	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Acetone cyanohydrin	Poison B	Poison	None	173.358	Forbidden	55 gallons	1	3	Shade from radiant heat. Stow away from corrosive materials
	Acetone oil	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Acetonitrile	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1	4	Shade from radiant heat
	Acetyl benzoyl peroxide, solid	Forbidden								
	Acetyl benzoyl peroxide solution, *not over 40% peroxide*	Organic peroxide	Organic peroxide	None	173.222	Forbidden	1 quart	1,2	1	
	Acetyl bromide	Corrosive material	Corrosive	173.244	173.247	1 quart	1 gallon	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Acetyl chloride	Flammable liquid	Flammable liquid	173.244	173.247	1 quart	1 gallon	1	1	Stow away from alcohols. Keep cool and dry. Separate longitudinally by an intervening complete compartment or hold from explosives
	Acetylene	Flammable gas	Flammable gas	None	173.303	Forbidden	300 pounds	1	1	Shade from radiant heat
A	Acetylene tetrabromide	ORM-A	None	173.505	173.510	10 gallons	55 gallons			
	Acetyl iodide	Corrosive material	Corrosive	173.244	173.247	1 quart	1 gallon	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Acetyl peroxide solution, *not over 25% peroxide*	Organic peroxide	Organic peroxide	173.153	173.222	Forbidden	1 quart	1,2	1	
	Acid butyl phosphate	Corrosive material	Corrosive	173.244	173.245	1 quart	5 gallons	1,2	1,2	Glass carboys in hampers not permitted under deck
	Acid carboy empty. *See* Carboy, empty									
*	Acid, liquid, n.o.s.	Corrosive material	Corrosive	173.244	173.245	1 quart	5 pints	1	4	Keep cool
*	Acid, sludge	Corrosive material	Corrosive	None	173.248	Forbidden	1 quart	1,2	1	
	Acrolein, inhibited	Flammable liquid	Flammable liquid and Poison	None	173.122	Forbidden	1 quart	1,2	3	Keep cool. Stow away from living quarters
	Acrylic acid	Corrosive material	Corrosive	173.244	173.245	1 quart	5 pints	1	1	
	Acrylonitrile	Flammable liquid	Flammable liquid and Poison	None	173.119	Forbidden	1 quart	1,2	3	Keep cool
	Actuating cartridge, explosive (*fire extinguisher, or valve*)	Class C explosive	Explosive C	173.114		50 pounds	150 pounds	1,2	1,2	Keep cool and dry
*	Adhesive, n.o.s. *See* Cement, liquid, n.o.s.									
	Aerosol product, each aerosol container exceeding 50 cubic inches capacity. See Compressed gas, n.o.s.									
*	Aerosol, *each aerosol container not exceeding 50 cubic inches capacity*	Flammable gas	Flammable gas	173.306	173.302 173.304 173.305	50 pounds	300 pounds			
*	Aerosol, *each aerosol container not exceeding 50 cubic inches capacity*	Nonflammable gas	Nonflammable gas	173.306	173.302 173.304 173.305	150 pounds	300 pounds			
*	Air, compressed	Nonflammable gas	Nonflammable gas	173.306	173.302	150 pounds	300 pounds	1,2	1,2	
	Aircraft rocket engine (*Commercial*)	Flammable solid	Flammable solid	None	173.238	Forbidden	350 pounds	1,3	3	
	Aircraft rocket engine igniter (*Commercial*)	Flammable solid	Flammable solid	None	173.238	Forbidden	25 pounds	1,3	5	
	Airplane flare. See Fireworks, special									
*	Alcohol, n.o.s.	Flammable liquid	Flammable liquid	173.118	173.125	1 quart	10 gallons	1,2	1	
*	Alcohol, n.o.s.	Combustible liquid	None	173.118a				1,2	1,2	
	Aldrin	Poison B	Poison	173.364	173.376	50 pounds	200 pounds	1,2	1,2	
A	Aldrin, cast solid	ORM-A	None	173.505	173.510					

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Aldrin mixture, dry (*with more than 65% aldrin*)	Poison B	Poison	173.364	173.376	50 pounds	200 pounds	1,2	1,2	
A	Aldrin mixture, dry, with 65% or less aldrin	ORM-A	None	173.505	173.510					
	Aldrin mixture, liquid (*with more than 60% aldrin*)	Poison B	Poison	173.345	173.361	1 quart	55 gallons	1,2	1,2	If flash point less than 141 DEG F., segregation same as for flammable liquids
A	Aldrin mixture, liquid, with 60% or less aldrin	ORM-A	None	173.505	173.510					
	Alkaline corrosive battery fluid	Corrosive material	Corrosive	173.244	173.249 173.257	1 quart	5 gallons	1,2	1,2	
	Alkaline corrosive battery fluid with empty storage battery	Corrosive material	Corrosive	None	173.258	Forbidden	5 pints	1,2	1,2	
*	Alkaline corrosive liquid, n.o.s.	Corrosive material	Corrosive	173.244	173.249	1 quart	5 gallons	1,2	1,2	
	Alkaline liquid, n.o.s.	Corrosive material	Corrosive	173.244	173.249	1 quart	5 gallons	1,2	1,2	
*	Alkanesulfonic acid	Corrosive material	Corrosive	173.244	173.245	5 pints	1 gallon	1,2	1	
	Alkyl aluminum halides. See Pyrophoric liquid, n.o.s.									
A	Allethrin	ORM-A	None	173.505	173.510					
	Allyl alcohol	Flammable liquid	Flammable liquid and Poison	173.118	173.119	1 quart	10 gallons	1,2	1	
	Allyl bromide	Flammable liquid	Flammable liquid	173.118	173.119	Forbidden	10 gallons	1,2	1	
	Allyl chloride	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,3	5	
	Allyl chlorocarbonate	Flammable liquid	Flammable liquid	None	173.288	Forbidden	5 pints	1	5	Keep dry. Separate longitudinally by an intervening complete hold or compartment from explosives. Segregation same as for corrosive materials
	Allyl chloroformate. *See* Allyl chlorocarbonate									
	Allyl trichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
	Aluminum alkyls. *See* Pyrophoric liquid, n.o.s.									
	Aluminum bromide, anhydrous	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	Keep dry
	Aluminum dross, wet *or* hot. *See* Sec. 173.173									
	Aluminum hydride	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solid labeled Dangerous When Wet
*	Aluminum, liquid *or* paint. *See* Paint, enamel, lacquer stain, shellac, varnish, etc.									
*	Aluminum, metallic, powder	Flammable solid	Flammable solid	173.232	173.232	25 pounds	100 pounds	1,2	1,2	Keep dry. Segregation same as for flammable solids labeled dangerous when wet
	Aluminum nitrate	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
*	Aluminum phosphate solution	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Aluminum phosphide	Flammable solid	Flammable solid and Dangerous when wet	None	173.154	Forbidden	25 pounds	1,2	1,2	Stow away from acids and oxidizing materials
	Amatol. See High explosive									
	2-(2-Aminoethoxy) ethanol	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	n-Aminoethylpiperazine	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Aminopropyldiethanolamine	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	n-Aminopropylmorpholine	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	bis (Aminopropyl) piperazine	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Ammonia, anhydrous	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314 173.315	Forbidden	300 pounds	1,2	4	Stow in well ventilated space
	Ammonia solution (*containing more than 44% ammonia*)	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314 173.315	Forbidden	300 pounds	1,2	4	Stow in well ventilated space
	Ammonia solution (containing 44% or less ammonia in water). See Ammonium hydroxide									

§172.101 Hazardous Materials Table (cont'd)

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(1) */W/A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
	Ammonium arsenate, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	Stow away from alkaline corrosives
	Ammonium bifluoride. *See* Ammonium hydrogen fluoride									
	Ammonium chlorate	Forbidden								
	Ammonium dichromate (*ammonium bichromate*)	Oxidizer	Oxidizer	173.153	173.154 173.235	25 pounds	100 pounds	1,2	1,2	
A	Ammonium fluoride	ORM-B	None	173.505	173.510 173.800	25 pounds	100 pounds			
A	Ammonium hydrogen fluoride, solid	ORM-B	None	173.505	173.510	25 pounds	100 pounds			
*	Ammonium hydrogen fluoride solution	Corrosive material	Corrosive	173.244	173.245	1 quart	5 gallons	1,2	1,2	Keep dry
A	Ammonium hydrogen sulfate	ORM-B	None	173.505	173.510 173.800	25 pounds	100 pounds			
A	Ammonium hydrosulfide solution	ORM-A	None	173.505	173.510 173.605	10 gallons	55 gallons			
*	Ammonium hydroxide (*containing not more than 44% ammonia*)	Corrosive material	Corrosive	173.244	173.245	2 gallons	2 gallons	1	4	
	Ammonium nitrate (no organic coating)	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
	Ammonium nitrate (organic coating)	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
	Ammonium nitrate-carbonate mixture	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
	Ammonium nitrate fertilizer, *containing no more than 0.2% carbon*	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
	Ammonium nitrate-fuel oil mixture. See Nitro carbonitrate or *Explosive, Class A or B*									
*	Ammonium nitrate mixed fertilizer	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
*	Ammonium nitrate-phosphate	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
*	Ammonium perchlorate	Oxidizer	Oxidizer	173.153	173.154 173.239a	25 pounds	100 pounds	1,2	4	Stow away from powdered metals
*	Ammonium perchlorate. *See* High explosives									
	Ammonium permanganate	Oxidizer	Oxidizer	173.153	173.154	Forbidden	Forbidden	1,2	1,2	Separate from ammonium compounds and hydrogen peroxide. This material may be forbidden in water transportation by certain countries
	Ammonium picrate. See High explosive									
	Ammonium picrate, wet (*with 10% or more water*)	Flammable solid	Flammable solid	173.192		1 pound	1 pound	1	4	Stow away from heavy metals and their compounds
A	Ammonium polysulfide solution	ORM-A	None	173.505	173.510 173.605	10 gallons	55 gallons			
W	Ammonium sulfate nitrate	ORM-C	None	173.505	173.910			1,2	1,2	Must not be accepted for transportation while hot. Separate by an intervening hold or compartment from Class A explosives. Separate from other explosives, corrosive materials, flammable solids, liquids, or gases, oxidizing materials, organic peroxides, or organic materials
*	Ammonium sulfide solution	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1,2	
	Ammunition, chemical (containing a Poison A liquid or gas). See Chemical ammunition (containing a Poison A material)									
	Ammunition, chemical (containing a Poison B material). See Chemical ammunition (containing a Poison B material)									
	Ammunition, chemical (containing an irritating liquid or solid). See Chemical ammunition (containing an irritating material)									
	Ammunition, chemical, explosive, with Poison A material	Class A explosive	Explosive A and Poison gas	None	173.59	Forbidden	Forbidden	6	5	No other cargo may be stowed in the same hold with these items
	Ammunition, chemical, explosive, with Poison B material	Class A explosive	Explosive A and Poison	None	173.59	Forbidden	Forbidden	6	5	No other cargo may be stowed in the same hold with these items
	Ammunition, chemical, explosive, with irritant	Class A explosive	Explosive A and Irritant	None	173.59	Forbidden	Forbidden	6	5	No other cargo may be stowed in the same hold with these items
	Ammunition for cannon with empty projectile	Class B explosive	Explosive B	None	173.89	Forbidden	Forbidden	1,2	5	
	Ammunition for cannon with explosive projectile	Class A explosive	Explosive A	None	173.54	Forbidden	Forbidden	6	5	
	Ammunition for cannon with gas projectile	Class A explosive	Explosive A	None	173.54	Forbidden	Forbidden	6	5	

§172.101 Hazardous Materials Table (cont'd)

(1) °/ W/ A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
	Ammunition for cannon with illuminating projectile	Class A explosive	Explosive A	None	173.54	Forbidden	Forbidden	6	5	
	Ammunition for cannon with incendiary projectile	Class A explosive	Explosive A	None	173.54	Forbidden	Forbidden	6	5	
	Ammunition for cannon with inert loaded projectile	Class B explosive	Explosive B	None	173.89	Forbidden	Forbidden	1,2	5	
	Ammunition for cannon with smoke projectile	Class A explosive	Explosive A	None	173.54	Forbidden	Forbidden	6	5	
	Ammunition for cannon with solid projectile	Class B explosive	Explosive B	None	173.89	Forbidden	Forbidden	1,2	5	
	Ammunition for cannon without projectile	Class B explosive	Explosive B	None	173.89	Forbidden	Forbidden	1,2	5	
	Ammunition, non-explosive			173.55						
	Ammunition for small-arms with explosive projectile	Class A explosive	Explosive A	None	173.58	Forbidden	Forbidden	6	5	
	Ammunition for small-arms with incendiary projectile	Class A explosive	Explosive A	None	173.58	Forbidden	Forbidden	6	5	
	Ammunition, rocket. See Rocket ammunition									
	Ammunition, small-arms. *See* Small-arms ammunition									
	Amyl acetate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1,2	
	Amyl acid phosphate	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Amylamine	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Amyl chloride	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Amylene, *normal*	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	1,3	
	Amyl formate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Amyl mercaptan	Flammable liquid	Flammable liquid	None	173.141	Forbidden	10 gallons	1,2	1	
	Amyl nitrite	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Amyl trichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1		Keep dry
	Anhydrous ammonia. *See* Ammonia, anhydrous									
	Anhydrous hydrazine. *See* Hydrazine, anhydrous									
	Anhydrous hydrofluoric acid. *See* Hydrogen fluoride									
	Aniline oil drum, empty			173.347				1,2	1	Do not accept unless returnable package notice is on drum and the instructions thereon have been carried out
	Aniline oil, liquid	Poison B	Poison	None	173.347	Forbidden	55 gallons	1,2	1,2	Stow away from oxidizing materials and acids
	Anisoyl chloride	Corrosive material	Corrosive	173.244	173.279	1 quart	1 quart	1	1	Keep dry
•	Antifreeze compound, liquid	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
•	Antifreeze compound, liquid	Combustible liquid	None	173.118a				1,2	1,2	
•	Antifreeze preparation, liquid	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
•	Antifreeze preparation, liquid	Combustible liquid	None	173.118a				1,2	1,2	
	Antimonous chloride. *See* Antimony trichlorida									
A	Antimony lactate, solid	ORM-A	None	173.505	173.510					
	Antimony pentachloride	Corrosive material	Corrosive	None	173.247	1 quart	1 quart	1	1	Keep dry. Glass carboys not permitted on passenger vessels
•	Antimony pentachloride solution	Corrosive material	Corrosive	173.244	173.245	1 quart	5 pints	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Antimony pentafluoride	Corrosive material	Corrosive	None	173.246	Forbidden	25 pounds	1	5	Keep dry
A	Antimony potassium tartrate solid	ORM-A	None	173.505	173.510					
A	Antimony sulfide, solid	ORM-A	None	173.505	173.510					
	Antimony trichloride, solid	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	Keep dry
•	Antimony trichloride solution	Corrosive material	Corrosive	173.244	173.245	1 quart	5 pints	1	1	Keep dry
•	Aqua ammonia solution (*containing 44% or less ammonia*). *See* Ammonium hydroxide									

§172.101 Hazardous Materials Table (cont'd) 5

(1) °/ W/ A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(c) Other requirements
°	Argon	Nonflammable gas	Nonflammable gas	173.306	173.302 173.314	150 pounds	300 pounds	1,3	1,3	
AW	Argon, liquid nonpressurized	ORM-C	None	173.505	173.510	Forbidden		1,2	1,2	
	Argon, liquid pressurized	Nonflammable gas	Nonflammable gas	None	173.304	Forbidden	300 pounds	1,3	1,3	
	Arsenic acid, solid	Poison B	Poison	173.364	173.366	50 pounds	200 pounds	1,2	1,2	
•	Arsenic acid solution	Poison B	Poison	173.345	173.348	1 quart	55 gallons	1,2	1,2	
•	Arsenical compound n.o.s., liquid, *or* arsenical mixture, n.o.s., liquid	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1,2	
•	Arsenical compound n.o.s., solid, *or* arsenical mixture, n.o.s., solid	Poison B	Poison	173.364	173.367	50 pounds	200 pounds	1,2	1,2	Keep dry
	Arsenical dip, liquid (*sheep dip*)	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1,2	
	Arsenical dust	Poison B	Poison	173.364	173.368	50 pounds	200 pounds	1,2	1,2	
	Arsenical flue dust	Poison B	Poison	173.364	173.368	50 pounds	200 pounds	1,2	1,2	
	Arsenic bromide, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Arsenic chloride (*arsenious*) liquid. *See* Arsenic trichloride									
	Arsenic iodide, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Arsenic pentoxide, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Arsenic, solid	Poison B	Poison	173.364	173.366	50 pounds	200 pounds	1,2	1,2	
	Arsenic sulfide, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	Keep dry
	Arsenic trichloride, liquid	Poison B	Poison	173.345	173.358	1 quart	55 gallons	1,2	1,2	
	Arsenic trioxide, solid	Poison B	Poison	173.364	173.366 173.368	50 pounds	200 pounds	1,2		
	Arsenic, white, solid. *See* Arsenic trioxide, solid									
	Arsenious acid, solid. *See* Arsenic trioxide, solid									
•	Arsenious and mercuric iodide solution	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1,2	
	Arsine	Poison A	Poison gas and Flammable gas	None	173.328	Forbidden	Forbidden	1	5	
W	Asphalt, *at or above its flashpoint*	ORM-C	None					1	5	When applicable, no fire or residue thereof may be present in the furnace heating the substance while the vehicle is on board a cargo vessel
•	Asphalt, cut back	Flammable liquid	Flammable liquid	173.118	173.131	1 quart	10 gallons	1,2	1	
•	Asphalt, cut back	Combustible liquid	None	173.118a				1,2	1,2	
	Automobile, motorcycle, tractor, or other self-propelled vehicle			173.120	173.306			1,2	1,2	
	Automobile, motorcycle, tractor, or other self-propelled vehicle, engine, or other mechanical apparatus, with charged electric storage battery, wet			173.120	173.250 173.306			1,2	1,2	
	1-Aziridinyl phosphine oxide (tris). *See* Tris-(1-aziridinyl) phosphine oxide									
	Bags, burlap used (*Also see burlap bags, etc.*)			173.28	173.930 173.931					
	Bags, sodium nitrate, empty and unwashed	Flammable solid	Flammable solid	None	173.155	Forbidden	25 pounds	1,2	1,2	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
•	Barium azide, wet, *50% or more water*	Flammable solid	Flammable solid	None	173.239	Forbidden	1 pound	1,2	1,2	Stow away from heavy metals
	Barium chlorate	Oxidizer	Oxidizer	173.153	173.163	25 pounds	100 pounds	1,2	1,2	Separate from ammonium compounds. Stow away from powdered metals
•	Barium chlorate, wet	Oxidizer	Oxidizer	173.153	173.163	25 pounds	200 pounds	1,2	1,2	Separate from ammonium compounds. Stow away from powdered metals
	Barium cyanide, solid	Poison B	Poison	173.370	173.370	25 pounds	200 pounds	1,2	1,2	Stow away from acids
	Barium nitrate	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
A	Barium oxide	ORM-B		173.505	173.510 173.800	25 pounds	100 pounds			
	Barium perchlorate	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	Stow away from powdered metals
	Barium permanganate	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	Separate from ammonium compounds and hydrogen peroxide
	Barium peroxide (*binoxide, dioxide*)	Oxidizer	Oxidizer	173.153	173.156	25 pounds	100 pounds	1,2	1,2	Keep dry

6 §172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
°/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Barrel, empty. *See* Drum, empty									
	Battery charger with electrolyte (acid or alkaline battery fluid)	Corrosive material	Corrosive	None	173.259	Forbidden	5 pints	1,2	1,2	
	Battery, dry. Not subject to Parts 170-189 of this subchapter									
	Battery, electric storage, wet	Corrosive material	Corrosive	173.260		Forbidden	No limit	1,2	1,2	
	Battery, electric storage, wet, with automobile, auto parts, engine (*or other specifically named mechanical apparatus*)	Corrosive material	Corrosive	173.250	173.260			1,2	1,2	Keep dry
	Battery, electric storage, wet with containers of corrosive battery fluid	Corrosive material	Corrosive	None	173.258	Forbidden	2 gallons	1,2	1,2	
	Battery fluid. See Electrolyte (acid) *or* Alkaline battery fluid									
W	Battery parts (*plates, grids, etc., unwashed, exhausted*)	ORM-C	None	173.505	173.915			1,2	4	
	Benzaldehyde	Combustible liquid	None	173.118a				1,2	1,2	
	Benzene (*benzol*)	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1 φ	
	Benzene phosphorus dichloride	Corrosive material	Corrosive	None	173.250a	Forbidden	5 pints	1	1	
	Benzene phosphorus thiodichloride	Corrosive material	Corrosive	None	173.250a	Forbidden	5 pints	1	1	
•	Benzine	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Benzoyl chloride	Corrosive material	Corrosive	173.244	173.247	1 quart	1 quart	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Benzoyl peroxide	Organic peroxide	Organic peroxide	None	173.157 173.158	Forbidden	25 pounds	1,2	1	
	Benzyl bromide (*bromotoluene, alpha*)	Corrosive material	Corrosive	None	173.281	Forbidden	5 pints	1	1	Keep dry
	Benzyl chloride	Corrosive material	Corrosive	173.244	173.295	Forbidden	1 quart	1	1	Keep dry
	Benzyl chloroformate (*or Benzyl chlorocarbonate*)	Corrosive material	Corrosive	None	173.288	Forbidden	5 pints	1	5	Keep dry
•	Beryllium compound, n.o.s.	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Black powder	Class A explosive	Explosive A	None	173.60	Forbidden	Forbidden	6	5	
	Black powder igniter with empty cartridge bag	Class C explosive	Explosive C	None	173.106	50 pounds	150 pounds	1,3	1,3	
	Blasting caps—(*1,000 or less*) (*Show actual number*)	Class C explosive	Explosive C	None	173.103	Forbidden	Forbidden	1,2	5	Portable magazine or metal locker. Do not stow blasting caps with any high explosive. Do not handle blasting caps at the same time high explosives are being loaded
	Blasting caps—(*more than 1,000*) (*Show actual number*)	Class A explosive	Explosive A	None	173.66	Forbidden	Forbidden	6	5	Do not stow blasting caps with any high explosive. Do not handle blasting caps at the same time high explosives are being loaded
	Blasting caps—electric (*1,000 or less*) (*Show actual number*)	Class C explosive	Explosive C	None	173.103	Forbidden	Forbidden	1,2	5	Portable magazine or metal locker. Do not stow blasting caps with any high explosive. Do not handle blasting caps at the same time high explosives are being loaded
	Blasting caps—electric (*more than 1,000*) (*Show actual number*)	Class A explosive	Explosive A	None	173.66	Forbidden	Forbidden	6	5	Magazine. Do not stow blasting caps with any high explosives. Do not handle blasting caps at the same time high explosives are being loaded
	Blasting caps with metal clad mild detonating fuse—(*1,000 or less*) (*Show actual number*)	Class C explosive	Explosive C	None	173.103	Forbidden	Forbidden	1,2	5	Portable magazine or metal locker. Do not stow blasting caps with any high explosive. Do not handle blasting caps at the same time high explosives are being loaded
	Blasting caps with metal clad mild detonating fuse—(*more than 1,000*) (*Show actual number*)	Class A explosive	Explosive A	None	173.66 173.67	Forbidden	Forbidden	6	5	Do not stow blasting caps with any high explosive. Do not handle blasting caps at the same time high explosives are being loaded
	Blasting caps with safety fuse—(*1,000 or less*) (*Show actual number*)	Class C explosive	Explosive C	None	173.103	Forbidden	Forbidden	1,2	5	Portable magazine or metal locker. Do not stow blasting caps with any high explosive. Do not handle blasting caps at the same time high explosives are being loaded
	Blasting caps with safety fuse—(*more than 1,000*) (*Show actual number*)	Class A explosive	Explosive A	None	173.66 173.67	Forbidden	Forbidden	6	5	Do not stow blasting caps with any high explosive. Do not handle blasting caps at the same time high explosives are being loaded
	Blasting gelatin. See High explosive									
	Blasting powder. See Black powder									

§172.101 Hazardous Materials Table (cont'd)

(1) °/ W/ A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
W	Bleaching powder, *containing 39% or less available chlorine*	ORM-C	None	173.505	173.920			1,2	1,2	Keep dry. Stow separate from flammable liquids and acids. (Stow away from oils, grease, and similar organic materials)
	Bleaching powder, *over 39% available chlorine*	Oxidizer	Oxidizer	173.153	173.217	50 pounds	100 pounds	1,2	1,2	Keep cool and dry
°	Boiler compound, liquid	Corrosive material	Corrosive	173.244	173.249	1 quart	10 gallons	1,2	1,2	
	Bomb, explosive. See Explosive bomb									
	Bomb, explosive with gas, smoke, or incendiary material. See Explosive bomb									
	Bomb, fireworks. See Fireworks, special									
	Bomb, gas, smoke, or incendiary, non-explosive. See Chemical ammunition									
	Bomb, incendiary, or smoke without bursting charge. See Fireworks, special									
	Bomb, practice, with electric primer or electric squib (non-explosive)			173.55						
	Bomb, sand-loaded or empty (non-explosive)			173.55						
A	Bone oil	ORM-A	None	173.505	173.510					
	Booster, explosive	Class A explosive	Explosive A	None	173.69	Forbidden	Forbidden	6	6	
°	Bordeaux arsenite, liquid	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1,2	
°	Bordeaux arsenite, solid	Poison B	Poison	173.364	173.365	50 pounds	300 pounds	1,2	1,2	
	Boron tribromide	Corrosive material		None	173.251	Forbidden	1 quart	1	5	
	Boron trichloride	Corrosive material	Corrosive	None	173.251	Forbidden	1 quart	1,2	5	Stow in well ventilated space. Shade from radiant heat. Segregation same as for nonflammable gases
	Boron trifluoride	Nonflammable gas	Nonflammable gas and Poison	None	173.302	Forbidden	Forbidden	1	5	Stow away from living quarters and foodstuffs
	Boron trifluoride-acetic acid complex	Corrosive material	Corrosive	173.244	173.247	1 quart	1 gallon	1,2	1,2	
	Bottles, empty, *having previously contained a corrosive liquid and not cleaned*			173.29						
W°	Box toe board (*nitrocellulose base*)	ORM-C		173.505	173.925			1,3	1,3	Provide cool stowage in a compartment having a temperature not exceeding 130ODEG0 F., well away from any sources of heat, and in position to protect or move, even to jettison in event of fire. Separate from explosives, flammable liquids or gases, oxidizing materials, organic peroxides, or corrosive liquids.
°	Box toe gum	Combustible liquid	None	173.118a				1,2	1,2	
°	Box toe gum	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Bromine	Corrosive material	Corrosive	None	173.252	Forbidden	1 quart	1	5	Keep cool
	Bromine pentafluoride	Oxidizer	Oxidizer	None	173.246	Forbidden	100 pounds	1	5	Shade from radiant heat. Segregation same as for corrosives
	Bromine trifluoride	Oxidizer	Oxidizer and Poison	None	173.246	Forbidden	100 pounds	1	5	Shade from radiant heat. Segregation same as for corrosives
	Bromoacetic acid, solid	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	Keep dry
°	Bromoacetic acid solution	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1,2	1,2	Glass carboys in hampers not permitted under deck
	Bromoacetone, liquid	Poison A	Poison gas	None	173.329	Forbidden	Forbidden	1	5	Segregation same as for flammable liquids
	Bromobenzene	Combustible liquid	None	173.118a				1,2	1,2	
	Bromotoluene, alpha. *See* Benzyl bromide									
	Brucine, solid (dimethoxy strychnine)	Poison B	Poison	173.364	173.365	50 pounds	300 pounds	1,2	1,2	
W	Burlap bags, cleaned (*vacuum cleaned, wheel cleaned, or otherwise mechanically brushed*). *See* Burlap cloth									
W	Burlap bags, new. *See* Burlap cloth									
AW	Burlap bags, used and unwashed, *or* not cleaned	ORM-C	None	173.930				1	1	Keep cool
W	Burlap cloth (*hessian*)	ORM-C	None	173.931				1,2	1,2	Keep dry. Stow away from organic liquids
	Burnt cotton, not repicked	Flammable solid	Flammable solid	None	173.159	Forbidden	Forbidden	1	5	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides

8 §172.101 Hazardous Materials Table (cont'd)

(1) */W/A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
	Burnt fiber	Flammable solid	Flammable solid	None	173.169	Forbidden	Forbidden	1,2	1,2	Separate from flammable gases or liquids, oxidizing materials or organic peroxides
	Burster, explosive	Class A explosive	Explosive A	None	173.69	Forbidden	Forbidden	6	5	
	Butadiene, inhibited	Flammable gas	Flammable gas	173.306	173.304 173.314 173.315	Forbidden	300 pounds	1,2	1	Stow away from living quarters
	Butane *or* Liquefied petroleum gas. *See* Liquefied petroleum gas									
	Butyl acetate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	n-Butyl acid phosphate. *See* Acid butyl phosphate									
*	Butyl alcohol. *See* Alcohol, n.o.s.									
	Butylamine	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Butyl bromide, *normal*	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Butyl chloride	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Butyl ether	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1,2	
	Butyl formate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	n-Butyl isocyanate	Flammable liquid	Flammable liquid and Poison	173.118	173.119	1 quart	10 gallons	1,2	1	
	Butyl mercaptan	Flammable liquid	Flammable liquid	None	173.141	Forbidden	10 gallons	1,3	5	
	Butyl phosphoric acid. *See* n-Butyl acid phosphate									
	Butyl trichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
	Butyraldehyde	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Butyric acid	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Calcium arsenate, solid	Poison B	Poison	173.364	173.367 173.368	50 pounds	200 pounds	1,2	1,2	
	Calcium arsenite, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
*	Calcium bisulfite solution. *See* *Calcium hydrogen sulfite solution									
	Calcium carbide	Flammable solid	Flammable solid	None	173.178	Forbidden	25 pounds	1,2	1,2	Keep dry. Stow away from copper, its alloys, and salts
	Calcium chlorate	Oxidizer	Oxidizer	173.153	173.163	25 pounds	100 pounds	1,2	1,2	Separate from ammonium compounds. Stow away from powdered metals and cyanide
	Calcium chlorite	Oxidizer	Oxidizer	None	173.160	Forbidden	100 pounds	1,2	1,2	Separate from ammonium compounds powdered materials, and cyanides
AW	Calcium cyanamide, not hydrated, containing more than 0.1% calcium carbide	ORM-C	None	None	173.945	25 pounds	200 pounds	1,2	1,2	Segregation same as for flammable solids labeled Dangerous When Wet
*	Calcium cyanide, solid *or* Calcium cyanide mixture, solid	Poison B	Poison	173.370		25 pounds	200 pounds	1,2	1,2	Stow away from corrosive liquids. Keep dry
*	Calcium hydrogen sulfite solution	Corrosive material	Corrosive	173.244	173.245	1 quart	5 gallons	1,2	1,2	
	Calcium hypochlorite mixture, dry, (*containing more than 39% available chlorine*)	Oxidizer	Oxidizer	173.153	173.217	50 pounds	100 pounds	1,2	1,2	Keep cool and dry
	Calcium, metal	Flammable solid	Flammable solid and Dangerous when wet	173.153	173.154	25 pounds	100 pounds	1,2	4	Keep cool and dry. Segregation same as for flammable solids labeled Dangerous When Wet
	Calcium, metal, crystalline	Flammable solid	Flammable solid and Dangerous when wet	None	173.231	Forbidden	25 pounds	1,2	3	Keep cool and dry. Segregation same as for flammable solids labeled Dangerous When Wet
*	Calcium nitrate (*See Sec. 173.182 Note*)	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
AW	Calcium oxide	ORM-B	None	173.505	173.850	25 pounds	100 pounds	1,2	1,2	Keep dry. Stow away from explosives, acids, combustible materials, and ammonium salts
	Calcium permanganate	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	Separate from ammonium compounds and hydrogen peroxide
	Calcium peroxide	Oxidizer	Oxidizer	173.153	173.156	25 pounds	100 pounds	1,2	1,2	Keep dry
	Calcium phosphide	Flammable solid	Flammable solid and Dangerous when wet	None	173.161	Forbidden	25 pounds	1	5	Keep cool and dry. Segregation same as for flammable solids labeled Dangerous When Wet

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Calcium resinate	Flammable solid	Flammable solid	None	173.166	Forbidden	125 pounds	1	5	
	Calcium resinate, fused	Flammable solid	Flammable solid	None	173.166	Forbidden	125 pounds	1	5	
AW	Camphene	ORM-A	None	173.505	173.948			1,3	1,3	Stow away from foodstuffs and living quarters
	Camphor oil	Combustible liquid	None	173.118a				1,2	1,2	
	Cannon primers	Class C explosive	Explosive C	None	173.107	50 pounds	150 pounds	1,3	5	
	Caprylyl peroxide solution	Organic peroxide	Organic peroxide	173.153	173.221	1 quart	1 quart	1,2	4	Keep cool. Stow separate from combustible materials, explosives, or acids
	Caps, blasting. See Blasting caps									
	Caps, toy. See Toy caps									
A	Carbaryl	ORM-A	None	173.505	173.510					
	Carbolic acid, liquid *or* Phenol, liquid (*liquid tar acid containing over 50% benzophenol*)	Poison B	Poison	173.345	173.349	1 quart	55 gallons	1,2	1,2	
	Carbolic acid, *or* Phenol	Poison B	Poison	173.364	173.369	50 pounds	250 pounds	1,2	1,2	
	Carbon bisulfide, *or* Carbon disulfide	Flammable liquid	Flammable liquid	None	173.121	Forbidden	Forbidden	1	5	Keep cool. Not permitted on any vessel transporting explosives
•	Carbon dioxide, liquefied	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314 173.315	150 pounds	300 pounds	1,2	1,2	
•	Carbon dioxide-nitrous oxide mixture	Nonflammable gas	Nonflammable gas	173.306	173.304	150 pounds	300 pounds	1,2	1,2	
•	Carbon dioxide-oxygen mixture	Nonflammable gas	Nonflammable gas	173.306	173.304	150 pounds	300 pounds	1,2	1,2	
AW	Carbon dioxide, solid, *or* Dry ice, *or* Carbonice	ORM-A	None	None	173.615			1	1	Stow away from open ventilators. Stow away from cyanides or cyanide mixtures, liquid or dry
	Carbon monoxide	Flammable gas	Flammable gas	173.306	173.302	Forbidden	150 pounds	1	4	
•	Carbon remover, liquid	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
AW	Carbon tetrachloride	ORM-A	None	173.505	173.620	1 quart	55 gallons	1,2	1,2	Stow away from living quarters
	Carbonyl chloride. See Phosgene									
	Carboys, empty (*previously used for hazardous materials*)			173.29				1,2	1,2	
	Cartridge bags, empty, with black powder igniter	Class C explosive	Explosive C	None	173.106	50 pounds	150 pounds	1,3	1,3	
	Cartridge cases, empty, primed	Class C explosive	Explosive C	None	173.107	50 pounds	150 pounds	1,3	1,3	
	Cartridge, practice ammunition	Class C explosive	Explosive C	None	173.101a	50 pounds	150 pounds	1,2	1,2	
	Case oil. See Gasoline *or* Naphtha									
	Casinghead gasoline. See Gasoline									
W	Castor beans	ORM-C	None	173.505	173.625			1,2	1,2	Stow away from living quarters and foodstuffs. Bulk shipments permitted in tight vans or containers only on cargo vessels (Castor beans only)
W	Castor pomace. *See* Castor beans									
	Caustic potash, dry, solid, flake, bead, *or* granular. *See* Potassium hydroxide, dry, etc.									
•	Caustic potash, liquid *or* solution. *See* Potassium hydroxide solution									
	Caustic soda, dry, solid, flake, bead, *or* granular. *See* Sodium hydroxide, dry, etc.									
•	Caustic soda, liquid *or* solution. *See* Sodium hydroxide solution									
W	*Cellosolve. See* Ethylene glycol monoethyl ether									
W	*Cellosolve acetate. See* Ethylene glycol monoethyl ether acetate									
•	Cement, adhesive, n.o.s. *See* Cement, liquid, n.o.s.									
•	Cement, container, linoleum, tile, *or* wallboard, liquid	Flammable liquid	Flammable liquid	173.118	173.132	1 quart	15 gallons	1,2	1	
•	Cement, leather	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
•	Cement, liquid, n.o.s.	Combustible liquid	None	173.118a				1,2	1,2	
•	Cement, liquid, n.o.s.	Flammable liquid	Flammable liquid	173.118	173.132	1 quart	10 gallons	1,2	1	
•	Cement, pyroxylin	Flammable liquid	Flammable liquid	173.118	173.132	1 quart	15 gallons	1,2	1	

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
						(a)	(b)	(a)	(b)	(c)
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	Passenger carrying aircraft	Cargo only aircraft	Cargo vessel	Passenger vessel	Other requirements
*	Cement, roofing, liquid	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
*	Cement, rubber	Flammable liquid	Flammable liquid	173.118	173.132	1 quart	15 gallons	1,2	1	
	Cesium metal	Flammable solid	Flammable solid and dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet
	Charcoal, activated	Flammable solid	Flammable solid	173.162	173.162	25 pounds	200 pounds	1,3	1,3	
	Charcoal briquettes	Flammable solid	Flammable solid	173.162	173.162	50 pounds	50 pounds	1,2	1,2	
	Charcoal screenings, made from "pinon" wood	Flammable solid	Flammable solid	173.162	173.162	25 pounds	200 pounds	1,2	1,2	
	Charcoal screenings, wet	Forbidden								
	Charcoal, shell	Flammable solid	Flammable solid	173.162	173.162	25 pounds	200 pounds	1,2	1,2	
	Charcoal, wet	Forbidden								
	Charcoal, wood, ground, crushed, granulated, or pulverized	Flammable solid	Flammable solid	173.162	173.162	25 pounds	200 pounds	1,2	1,2	
	Charcoal, wood, lump	Flammable solid	Flammable solid	173.162	173.162	50 pounds	50 pounds	1,2	1,2	
	Charcoal wood screenings, other than "pinon" wood screenings	Flammable solid	Flammable solid	None	173.162	Forbidden	Forbidden	1	1	
	Charged oil well jet perforating gun (*total explosive contents in guns 20 pounds or more per motor vehicle*)	Class A explosive	Explosive A	None	173.53 173.80	Forbidden	Forbidden			Forbidden
	Charged oil well jet perforating gun (*total explosive contents in guns not exceeding 20 pounds per motor vehicle*)	Class C explosive	Explosive C	None	173.53 173.110	Forbidden	Forbidden			Forbidden
	Chemical ammunition explosive. See Ammunition, chemical, explosive									
	Chemical ammunition, nonexplosive (*containing a Poison B material*)	Poison B	Poison	173.345	173.350	Forbidden	55 gallons			*See* correct shipping name of applicable Poison B material for stowage, special handling, and special segregation requirements
	Chemical ammunition, nonexplosive (*containing an irritating material*)	Irritating material	Irritant	None	173.83	Forbidden	20 pounds			*See* correct shipping name of applicable Irritant material for stowage, special handling, and special segregation requirements
	Chemical ammunition, nonexplosive (*containing a poison A material*)	Poison A	Poison gas	None	173.330	Forbidden	Forbidden			*See* correct shipping name of applicable Poison A material for stowage, special handling, and special segregation requirements
*	Chemical kit	Corrosive material	Corrosive	173.286		1 quart	1 quart	1,3	1,3	
*	Chlorate and borate mixture (*containing more than 28% chlorate*)	Oxidizer	Oxidizer	173.153	173.229	25 pounds	100 pounds	1,2	4	Stow away from ammonium compounds and away from powdered metals
*	Chlorate and magnesium chloride mixture (*containing more than 28% chlorate*)	Oxidizer	Oxidizer	173.153	173.229	25 pounds	100 pounds	1,2	4	Stow away from ammonium compounds, and away from powdered metals
	Chlorate explosive, dry. See High explosive									
	Chlorate, n.o.s.	Oxidizer	Oxidizer	173.153	173.163	25 pounds	100 pounds	1,2	4	Stow away from ammonium compounds and away from powdered metals
*	Chlorate, n.o.s., wet	Oxidizer	Oxidizer	173.153	173.163	25 pounds	200 pounds	1,2	4	Stow away from ammonium compounds and away from powdered metals
	Chlorate of potash. *See* Potassium chlorate									
	Chlorate of soda. *See* Sodium chlorate									
	Chlorate powder. See High explosive									
	Chlordane, liquid	Combustible liquid	None	173.118a				1,2	1,2	
	Chloric acid. (*see* chlorine dioxide hydrate)									
	Chloride of phosphorus. *See* Phosphorus trichloride									
	Chloride of sulfur. *See* Sulfur chloride									
W	Chlorinated lime (*chloride of lime.*) *See* Bleaching powder									
	Chlorine	Nonflammable gas	Nonflammable gas and Poison	None	173.304 173.314 173.315	Forbidden	Forbidden	1,2	5	Stow in a well-ventilated space. Stow away from organic materials
	Chlorine dioxide hydrate, frozen	Oxidizer	Oxidizer and Poison	None	173.237	Forbidden	Forbidden			Forbidden
	Chlorine trifluoride	Oxidizer	Oxidizer and Poison	None	173.246	Forbidden	100 pounds	1,3	5	Stow in well ventilated area away from organic material
	Chloroacetic acid, solid	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	Keep dry
*	Chloroacetic acid solution. *See* Monochloroacetic acid solution									

§172.101 Hazardous Materials Table (cont'd)

(1) °/ W/ A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
	Chloroacetophenone, gas, liquid, or solid (CN)	Irritating material	Irritant	None	173.382	Forbidden	75 pounds	1	5	
	Chloroacetyl chloride	Corrosive material	Corrosive	None	173.253	Forbidden	1 quart	1	5	Keep dry
	Chlorobenzene. *See* Chlorobenzol									
	Chlorobenzol	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1,2	
	p-Chlorobenzoyl peroxide	Organic peroxide	Organic peroxide	None	173.157 173.158	Forbidden	25 pounds	1	1	
	Chlorodinitrobenzene. See Dinitrochlorobenzene									
	Chlorodinitrobenzol. See Dinitrochlorobenzol, solid									
AW	Chloroform	ORM-A	None	173.505	173.630	10 gallons	55 gallons	1,2	1,2	Stow away from living quarters and foodstuffs
	4-Chloro-o-toluidine hydrochloride	Poison B	Poison	None	173.362	Forbidden	1 quart	1,2	1,2	
	Chlorophenyltrichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
	Chloropicrin, absorbed	Poison B	Poison	None	173.357	Forbidden	Forbidden	1	5	Keep cool
	Chloropicrin and methyl chloride mixture	Poison A	Flammable gas and Poison gas	None	173.329	Forbidden	Forbidden	1	5	Keep cool
	Chloropicrin and nonflammable, nonliquefied compressed gas mixture	Poison A	Nonflammable gas and Poison gas	None	173.329	Forbidden	Forbidden 1		5	Keep cool
	Chloropicrin, liquid	Poison B	Poison	None	173.357	Forbidden	Forbidden	1	5	Keep cool
	Chloropicrin mixture (*containing no compressed gas or poison A liquid*)	Poison B	Poison	None	173.357	Forbidden	Forbidden	1	5	Keep cool
A	Chloroplatinic acid, solid	ORM-B	None	173.505	173.510 173.800	25 pounds	100 pounds			
	2-Chloropropene	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,2	5	
	Chlorosulfonic acid	Corrosive material	Corrosive	173.244	173.254	1 quart	1 quart	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Chlorosulfonic acid-sulfur trioxide mixture	Corrosive material	Corrosive	173.244	173.254	1 quart	1 quart	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Chromic acid mixture, dry	Oxidizer	Oxidizer	173.153	173.164	25 pounds	100 pounds	1,2	1,2	Stow away from foodstuffs
	Chromic acid, solid	Oxidizer	Oxidizer	173.153	173.164	25 pounds	100 pounds	1,2	1,2	Stow away from foodstuffs. Stow separate from flammable liquids and solids
•	Chromic acid solution	Corrosive material	Corrosive	173.244	173.287	1 quart	1 gallon	1	1	
	Chromic anhydride. *See* Chromic acid, solid									
	Chromic fluoride, solid	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	
•	Chromic fluoride solution	Corrosive material	Corrosive	173.244	173.245	1 quart	1 gallon	1,2	1,2	
	Chromic trioxide. *See* Chromic acid, solid									
	Chromium oxychloride *or* Chromyl chloride	Corrosive material	Corrosive	None	173.247	Forbidden	1 gallon	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Cigar and cigarette lighter fluid. See Lighter fluid									
•	Cigarette lighter (*or other similar ignition device*)	Flammable gas	Flammable gas	173.21	173.308	21 ounces	25 pounds	1	1	
•	Cigarette lighter (*or other similar ignition device*)	Flammable liquid	Flammable liquid	173.21	173.118	Forbidden	Forbidden	1	1	
	Cigarette load	Class C explosive	Explosive C	None	173.111	50 pounds	150 pounds	1,2	1,2	
	Clothing, used. See Rags, scrap									
	Cloud gas cylinder. See Chemical ammunition									
	Coal briquettes, hot	Forbidden								
	Coal facings. *See* Coal ground bituminous, *etc.*									
	Coal gas. See Hydrocarbon gas, nonliquefied									
	Coal, ground bituminous, sea coal; coal facings; *etc.*	Flammable solid	Flammable solid	173.165		Forbidden	Forbidden	1	1	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Coal oil (*export shipment only*). *See* Kerosene									
•	Coal tar distillate	Combustible liquid	None	173.118a				1,2	1,2	

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
						(a)	(b)	(a)	(b)	(c)
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	Passenger carrying aircraft	Cargo only aircraft	Cargo vessel	Passenger vessel	Other requirements
*	Coal tar distillate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
*	Coal tar dye, liquid (*not otherwise specifically named in Sec. 172.101*)	Corrosive material	Corrosive	173.244	173.245 173.249a	1 quart	10 gallons	1,2	1,2	
*	Coal tar light oil	Combustible liquid	None	173.118a				1,2	1,2	
*	Coal tar light oil	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
*	Coal tar naphtha	Combustible liquid	None	173.118a				1,2	1,2	
*	Coal tar naphtha	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
*	Coal tar oil	Combustible liquid	None	173.118a				1,2	1,2	
*	Coal tar oil	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1,2	
*	Coating solution	Flammable liquid	Flammable liquid	173.118	173.132	1 quart	15 gallons	1,2	1	
	Cobalt resinate, precipitated	Flammable solid	Flammable solid	None	173.166	Forbidden	125 pounds	1,2	1,2	
	Cocculus, solid (*fishberry*)	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
W*	Coconut meal pellets *containing at least 6% and not more than 13% moisture and not more than 10% residual fat content*	ORM-C	None	173.505	173.955			1,2	4	Keep dry
	Coir. *See* Fibers									
	Coke, hot	Forbidden								
	Collodion	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Collodion cotton, wet. See Nitrocellulose, wet									
	Cologne spirits (*alcohol*)	Flammable liquid	Flammable liquid	173.118	173.125	1 quart	10 gallons	1,2	1	
	Columbian spirits (*wood alcohol*)	Flammable liquid	Flammable liquid	173.118	173.125	1 quart	10 gallons	1,2	1	
	Combination fuze	Class C explosive	Explosive C	None	173.105	50 pounds	150 pounds	1,3	1,3	
	Combination primer	Class C explosive	Explosive C	None	173.107	50 pounds	150 pounds	1,3	3	
	Combustible liquid, n.o.s.	Combustible liquid	None	173.118a				1,2	1,2	
	Commercial shaped charge. See High explosive									
	Common fireworks. *See* Fireworks, common									
*	Compound, cleaning, liquid	Combustible liquid	None	173.118a				1,2	1,2	
*	Compound, cleaning, liquid	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1,2	1,2	
*	Compound, cleaning, liquid	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
*	Compound, cleaning, liquid (containing hydrochloric (muriatic) acid)	Corrosive material	Corrosive	173.244	173.263	1 quart	1 gallon	1	1	
*	Compound, cleaning, liquid (containing hydrofluoric acid)	Corrosive material	Corrosive	173.244	173.256	1 quart	1 gallon	1	4	
*	Compound, cleaning liquid (*containing phosphoric acid, acetic acid, sodium or potassium hydroxide*)	Corrosive material	Corrosive	173.244	173.245 173.249a	1 quart	1 quart	1,2	1,2	
*	Compound, enamel	Flammable liquid	Flammable liquid	173.118	173.128	1 quart	55 gallons	1,2	1	
*	Compound, lacquer, paint, *or* varnish removing, liquid	Corrosive material	Corrosive	173.244	173.245	1 quart	1 gallon	1,2	1,2	
*	Compound, lacquer, paint, *or* varnish, removing, reducing, *or* thinning, liquid	Combustible liquid	None	173.118a				1,2	1,2	
*	Compound, lacquer, paint, *or* varnish, removing, reducing, *or* thinning, liquid	Flammable liquid	Flammable liquid	173.118	173.128	1 quart	55 gallons	1,2	1	
*	Compound, polishing, liquid	Flammable liquid	Flammable liquid	173.118	173.129	1 quart	55 gallons	1,2	1	
*	Compound, rust preventing *or* Compound, rust removing	Corrosive material	Corrosive	173.244	173.245	1 quart	1 gallon	1,2	1,2	
*	Compound, tree *or* weed killing, liquid	Combustible liquid	None	173.118a				1,2	1,2	
*	Compound, tree *or* weed killing, liquid	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1,2	1,2	
*	Compound, tree *or* weed killing, liquid	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
*	Compound, tree *or* weed killing, liquid	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1,2	
*	Compound, tree *or* weed killing, solid	Oxidizer	Oxidizer	173.153	173.154 173.229	25 pounds	100 pounds	1,2	1,2	

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7)		(8)		
						Maximum quantity in one package		Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
*	Compound, vulcanizing, liquid	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1,2	1,2	
*	Compound, vulcanizing, liquid	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
*	Compound, water treatment, liquid. *See* Water treatment, liquid									
	Compressed gas, flammable, n.o.s.	Flammable gas	Flammable gas	173.306	173.302 173.304 173.305	Forbidden	300 pounds	1	4	
	Compressed gas, nonflammable, n.o.s.	Nonflammable gas	Nonflammable gas	173.306	173.302 173.304 173.305	150 pounds	300 pounds	1,2	1,2	
	Consumer commodity	ORM-D	None	None	173.510 173.1200	65 pounds gross	65 pounds gross	1,2	5	
	Container, reused or empty (previously used for hazardous materials)			173.28	173.29					*See* Bottles, empty; carboys, empty; cylinders, empty; drums, empty
	Copper acetoarsenite, solid (*emerald green, imperial green, King's green, moss green, meadow green, mitis green, parrot green, Vienna green*)	Poison B	Poison	173.364	173.367	50 pounds	200 pounds	1,2	1,2	
	Copper arsenite, solid (*Scheeles green, cupric green, copper orthoarsenite, Swedish green*)	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
A	Copper chloride	ORM-B	None	173.505	173.510 173.800	25 pounds	100 pounds			
	Copper cyanide	Poison B	Poison	173.370		25 pounds		1,2	1,2	Stow away from acids
W	Copra	ORM-C	None	173.505	173.960		-	1,2	1,2	Segregation same as for flammable solids. Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Copra pellets. See Coconut meal pellets									
	Cordeau detonant fuse	Class C explosive	Explosive C	None	173.104	50 pounds	300 pounds	1,2	1,2	
	Corrosive battery fluid. *See* Electrolyte (acid), *or* Alkaline Corrosive battery fluid									
	Corrosive liquid, n.o.s.	Corrosive material	Corrosive	173.244	173.245 173.245a	1 quart	1 quart	1	4	
	Corrosive solid, n.o.s.	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1	4	
*	Cosmetics, n.o.s.	Combustible liquid	None	173.118a				1,2	1,2	
*	Cosmetics, n.o.s.	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
*	Cosmetics, n.o.s.	Flammable solid	Flammable solid	173.153	173.154	25 pounds	100 pounds	1,2	1,2	
*	Cosmetics, n.o.s.	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	
*	Cosmetics, n.o.s., liquid	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1,2	1,2	
*	Cosmetics, n.o.s., solid	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	Keep dry
W	Cotton	ORM-C	None	173.505	173.965			1,2	1,2	Segregation same as for flammable solids
W	Cotton batting	ORM-C	None	173.505	173.970			1,2	1,2	Keep dry. Stow away from vegetable or animal oils
W	Cotton batting dross. *See* Cotton batting									
	Cotton, burnt. See Burnt cotton									
W	Cotton seed hull fiber *or* shavings, pulp, *or* cut linters. *See* Cotton batting									
	Cotton sweepings. *See* Cotton waste									
W	Cotton wadding. *See* Cotton batting									
W	Cotton waste	ORM-C	None	173.505	173.975			1,2	1,2	Keep dry. Stow away from vegetable or animal oils
	Cotton waste, oily (*with more than 5% of animal or vegetable oil*)	Flammable solid	Flammable solid	None	173.167	Forbidden	Forbidden	1,2	1,2	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Creosote, coal tar	Combustible liquid	None	173.118a				1,2	1,2	
	Creosote oil. See Creosote, coal tar									
	Crotonaldehyde	Flammable liquid	Flammable liquid and Poison	713.118	173.119	1 quart	1 gallon	1,2	1	
	Crotonic acid	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Crotonylene	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Crude nitrogen fertilizer solution (more than 25.3 p.s.i.g.)	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314	Forbidden	300 pounds	1,3	1,3	

14 §172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
*	Crude oil, petroleum	Combustible liquid	None	173.118a				1,2	1,2	
*	Crude oil, petroleum	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Cumene hydroperoxide	Organic peroxide	Organic peroxide	173.153	173.224	1 quart	1 quart	1,2	4	
	Cupric cyanide. *See* Copper cyanide									
*	Cuprietylene-diamine solution	Corrosive material	Corrosive	173.244	173.249	1 quart	1 gallon	1,2	1,2	
*	Cyanide or cyanide mixture, dry	Poison B	Poison	173.364	173.370	25 pounds	200 pounds	1,2	1,2	Keep dry. Stow away from acids
	Cyanogen bromide	Poison B	Poison	None	173 379	Forbidden	25 pounds	1	5	Shade from radiant heat. Segregation same as for corrosive materials
	Cyanogen chloride *containing less than 0.9% water*	Poison A	Nonflammable gas and Poison	None	173.328	Forbidden	Forbidden	1	5	Shade from radiant heat
	Cyanogen gas	Poison A	Flammable gas and Poison	None	173.328	Forbidden	Forbidden	1	5	
	Cyclohexane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Cyclohexanone peroxide, *50 to 85% peroxide*	Organic peroxide	Organic peroxide	173.157	173.158	Forbidden	25 pounds	1	1	
	Cyclohexanone peroxide, *not over 50% peroxide*	Organic peroxide	Organic peroxide	173.153	173.154	2 pounds	25 pounds	1,2	1,2	
	Cyclohexanone peroxide and bis (1-hydroxy cyclohexyl) peroxide mixture. *See appropriate cyclohexanone peroxide entry immediately preceding*									
	Cyclohexenyl trichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
	Cyclohexyl trichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
	Cyclopentane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Cyclopentane, methyl	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Cyclopropane	Flammable gas	Flammable gas	173.306	173.304	Forbidden	300 pounds	1,2	1	
	Cyclotrimethylenetrinitramine, desensitized. *See* High explosive									
	Cyclotrimethylenetrinitramine, wet with not less than 10% water. *See* High explosive									
W	Cylinder, empty (*including "ton tanks"*) *previously having contained any hazardous material*			173.29				1,2	1,2	
	2,4-D. *See* 2,4-Dichlorophenoxyacetic acid									
A	DDT *or* Dichlorodiphenyltrichloroethane	ORM-A	None	173.505	173.510					
	Dead oil. *See* Creosote, coal tar									
	Decaborane	Flammable solid	Flammable solid and Poison	None	173.236	Forbidden	25 pounds	1,2	1,2	
	Decahydronaphthalene	Combustible liquid	None	173.118a				1,2	1,2	
	Decalin. *See* Decahydronaphthalene									
	Delay electric igniter	Class C explosive	Explosive C	None	173.106	50 pounds	150 pounds	1,3	1,3	
	Denatured alcohol. *See* Alcohol, n.o.s.									
	Depth bomb. *See* Explosive bomb									
	Detonating fuze, Class A explosive, *with or without radioactive components*	Class A explosive	Explosive A	None	173.69	Forbidden	Forbidden	6	5	
	Detonating fuze, Class C explosive	Class C explosive	Explosive C	None	173.113	50 pounds	150 pounds	1,3	1,3	
	Detonating primer	Class A explosive	Explosive A	None	173.68	Forbidden	Forbidden	6	5	
*	Diacetone alcohol	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Diacetyl	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
A	Diamon	ORM-A	None	173.505	173.510					
	Diazodinitrophenol. *See* Initiating explosive									
A	Dibromodifluoromethane	ORM-A	None	173.505	173.510 173.605	10 gallons	55 gallons			
W	1,2-Dibromoethane. *See* Ethylene dibromide									

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Dichloroacetic acid	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1,2	1,2	Glass carboy in hampers not permitted under deck
	Dichloroacetyl chloride	Corrosive material	Corrosive	173.244	173.247	1 quart	1 gallon	1	4	Keep dry
A	Dichlorobenzene, ortho, liquid	ORM-A	None	173.505	173.510					
A	Dichlorobenzene, para, solid	ORM-A	None	173.505	173.510					
	Dichlorobutene	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1,2	
A	Dichlorodifluoroethylene	ORM-A	None	173.505	173.510 173.605	10 gallons	55 gallons			
	Dichlorodifluoromethane	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314 173.315	150 pounds	300 pounds	1,2	1,2	
	Dichlorodifluoromethane and difluoroethane mixture (*constant boiling mixture*)	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314 173.315	150 pounds	300 pounds	1,2	1,2	
	Dichlorodifluoromethane-dichlorotetrafluoroethane mixture	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314 173.315	150 pounds	300 pounds	1,2	1,2	
	Dichlorodifluoromethane-monochlorodifluoromethane mixture	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314 173.315	150 pounds	300 pounds	1,2	1,2	
	Dichlorodifluoromethane-trichloromonofluoromethane mixture	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314 173.315	150 pounds	300 pounds	1,2	1,2	
	Dichlorodifluoromethane-trichloromonofluoromethane-monochloro difluoromethane mixture	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314 173.315	150 pounds	300 pounds	1,2	1,2	
	Dichlorodifluoromethane-trichlorotrifluoroethane mixture	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314 173.315	150 pounds	300 pounds	1,2	1,2	
	Dichlorodiphenyltrichloroethane. *See* DDT									
	Dichloroethylene	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Dichloroisopropyl ether	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
A	Dichloromethane *or* methylene chloride	ORM-A	None	173.505	173.510 173.605	10 gallons	55 gallons			
*	Dichloropentane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1,2	
A	2,4-Dichlorophenoxyacetic acid	ORM-A	None	173.505	173.510					
	Dichlorophenyltrichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
	Dichloropropene and propylene dichloride mixture	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Dicumyl peroxide *50% solution*	Organic peroxide	Organic peroxide	173.153	173.224	1 quart	1 quart	1,2	4	
	Dicumyl peroxide, *dry*	Organic peroxide	Organic peroxide	173.153	173.154	2 pounds	25 pounds	1,2	1,2	
A	Dieldrin	ORM-A	None	173.505	173.510					
	Diethylamine	Flammable liquid	Flammable liquid	173.118	173.119	Forbidden	5 pints	1,3	4	
	Diethyl cellosolve. *See* Ethylene glycol diethyl ether									
	Diethyl dichlorosilane	Flammable liquid	Flammable liquid	None	173.135	Forbidden	10 gallons	1	1	Keep dry. Segregation same as for corrosives
	Diethylene glycol dinitrate	Forbidden		173.51						
	Di-(2-ethylhexyl) phosphoric acid	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Diethyl ketone	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	1,1-Difluoro 1-chloroethane. *See* Difluoromonochloroethane									
	Difluoroethane	Flammable gas	Flammable gas	173.306	173.304 173.314 173.315	Forbidden	300 pounds	1,2	1	
	Difluoromonochloroethane (*1,1-difluoro 1-chloroethane*)	Flammable gas	Flammable gas	173.306	173.304 173.314 173.315	Forbidden	300 pounds	1,2	1	
	Difluorophosphoric acid, anhydrous	Corrosive material	Corrosive	None	173.275	Forbidden	1 gallon	1,2	1,2	
	Dihydropyran	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	4	
	Diisobutyl ketone	Combustible liquid	None	173.118a				1,2	1,2	
	Diisooctyl acid phosphate	Corrosive material	Corrosive	173.244	173.296	1 quart	1 quart	1,2	1,2	Glass carboys in hampers not permitted under deck
	Diisopropylamine	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	

16 §172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Diisopropylbenzene hydroperoxide solution, *not over 60% peroxide*	Organic peroxide	Organic peroxide	173.153	173.224	1 quart	1 quart	1,2	4	
	Diisopropylethanolamine	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Diisopropylether	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Dimethylamine, anhydrous	Flammable gas	Flammable gas	173.306	173.304 173.314 173.315	Forbidden	100 pounds	1,2	4	
*	Dimethylamine, aqueous solution	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	2,3-Dimethylbutane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Dimethyl carbonate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	1,4-Dimethylcyclohexane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Dimethyldichlorosilane	Flammable liquid	Flammable liquid	None	173.135	Forbidden	5 pints	1,2	1	
	Dimethyl ether	Flammable gas	Flammable gas	173.306	173.304 173.314 173.315	Forbidden	100 pounds	1,2	1	
	Dimethylhydrazine, unsymmetrical (*UDMH*)	Flammable liquid	Flammable liquid and Poison	None	173.145	Forbidden	5 pints	1,2	1	Keep dry. Separate from corrosive and oxidizing materials, and organic peroxides
	Dimethyl sulfate	Corrosive material	Corrosive and Poison	None	173.255	Forbidden	1 quart	1	5	Keep cool
	Dimethyl sulfide	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,2	5	
	Dinitrobenzene, solid, *or* dinitrobenzol, solid	Poison B	Poison	173.364	173.371	50 pounds	200 pounds	1,2	1,2	
*	Dinitrobenzene solution	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1,2	
	Dinitrochlorobenzol, solid *or* Dinitrochlorobenzene	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
A	Dinitrocyclohexylphenol	ORM-A	None	173.505	173.510					
*	Dinitrophenol solution	Poison B	Poison	173.345	173.362a	1 quart	63 pounds	1,2	1,2	Stow away from heavy metals and their compounds. If flash point is 141 DEG F or less segregation same as for flammable liquids
	Dioxane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Dioxolane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Diphenylaminechloroarsine (*DM*)	Irritating material	Irritant	None	173.382	Forbidden	75 pounds	1	5	
	Diphenyl dichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
	Diphenyl methyl bromide, solid	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1	4	
*	Diphenyl methyl bromide solution	Corrosive material	Corrosive	173.244	173.247	1 quart	1 gallon	1,2	1,2	
	Diphosgene. See Phosgene									
*	Disinfectant, liquid	Combustible liquid	None	173.118a				1,2	1,2	
*	Disinfectant, liquid	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1	4	
*	Disinfectant, liquid	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1	
*	Disinfectant, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1	
	Dispersant gas			173.314	173.315					
*	Distillate (*petroleum or coal tar*)	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Divinyl ether	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,3	4	
	Dodecyl trichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
*	Dressing, leather	Combustible liquid	None	173.118a				1,2	1,2	
*	Dressing, leather	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Drier. See Paint drier, liquid									
	Drill cartridge			173.55						
*	Drugs, n.o.s.	Combustible liquid	None	173.118a				1,2	1,2	
*	Drugs, n.o.s.	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
*	Drugs, n.o.s.	Flammable solid	Flammable solid	173.153	173.154	25 pounds	100 pounds	1,2	1,2	
*	Drugs, n.o.s.	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7)		(8)		
						Maximum quantity in one package		Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
*	Drugs, n.o.s., liquid	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1,2	1,2	
*	Drugs, n.o.s., liquid	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,3	1	
*	Drugs, n.o.s., solid	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	Keep dry
*	Drugs, n.o.s., solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,3	1,3	
W	Drum, empty (*previously having contained hazardous materials*)				173.29					
	Dry ice. *See* Carbon dioxide, solid									
	Dusts, by-product, poisonous. *See* Arsenical dust									
*	Dye intermediate, liquid	Corrosive material	Corrosive	173.244	173.245 173.249a	1 quart	10 gallons	1,2	1,2	Stow away from foodstuffs and living quarters
	Dynamite. *See* High explosive									
	Electric blasting caps. *See* Blasting caps, electric									
	Electric squib	Class C explosive	Explosive C	None	173.106	50 pounds	150 pounds	1,3	1,3	
	Electric storage battery, wet. *See* Battery, electric storage, wet									
	Electrolyte (*acid*), battery fluid (*not over 47% acid*)	Corrosive material	Corrosive	173.244	173.257	1 quart	5 gallons	1,2	1,2	Glass carboys in hampers not permitted under deck
	Electrolyte (*acid*), *or* alkaline (*corrosive*) battery fluid packed with battery charger, radio current supply device, *or* electronic equipment and actuating device	Corrosive material	Corrosive	None	173.259	Forbidden	5 pints	1,2	1,2	
	Electrolyte (*acid*), *or* alkaline (*corrosive*) battery fluid packed with dry-storage battery	Corrosive material	Corrosive	None	173.258	Forbidden	5 pints	1,2	1,2	
	Empty cartridge bag with black powder igniter	Class C explosive	Explosive C	None	173.106	50 pounds	150 pounds	1,3	1,3	
	Empty cartridge case, primed	Class C explosive	Explosive C	None	173.107	50 pounds	150 pounds	1,3	1,3	
*	Enamel. *See* *Paint, enamel, lacquer, etc.									
	Engine, internal combustion			173.120				1,2	1,2	Not permitted in unventilated containers
	Engine starting fluid	Flammable gas	Flammable gas	None	173.304	Forbidden	60 pounds	1,2	5	
	Epichlorohydrin	Flammable liquid	Flammable liquid and Poison	None	173.119	Forbidden	10 gallons	1,2	5	
*	Eradicator, paint *or* grease, liquid	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Etching acid, liquid, n.o.s.	Corrosive material	Corrosive	None	173.299	Forbidden	10 pounds	1	1	
	Ethane	Flammable gas	Flammable gas	173.306	173.304	Forbidden	300 pounds	1,2	4	
	Ether (*ethyl*)	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,3	5	
	Ether, Ethyl. *See* Ether									
	Ethyl acetate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Ethyl acrylate, inhibited	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Ethyl alcohol. *See* Alcohol, n.o.s.									
	Ethyl aldehyde. *See* Acetaldehyde									
	Ethyl benzene	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Ethyl borate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	Keep dry
	Ethyl butyl acetate	Combustible liquid	None	173.118a				1,2	1,2	
	Ethyl butyl ether	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Ethyl butyraldehyde	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Ethyl butyrate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1,2	
	Ethyl chloride	Flammable liquid	Flammable liquid	None	173.123	Forbidden	173.123	1,2	1	Segregation same as for flammable gases
	Ethyl chloroacetate	Combustible liquid	None	173.118a				1,2	1,2	
	Ethyl chloroformate (*chlorocarbonate*)	Flammable liquid	Flammable liquid and Poison	None	173.288	Forbidden	5 pints	1,2	1	
	Ethyl chlorothioformate	Corrosive material	Corrosive	173.244	173.245 173.245a	1 quart	1 quart	1,2	1	

§172.101 Hazardous Materials Table (cont'd)

(1) */W/X	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
	Ethyl crotonate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Ethyl dichlorosilane	Flammable liquid	Flammable liquid	None	173.135	Forbidden	5 pints	1,2	1	
	Ethylene	Flammable gas	Flammable gas	173.306	173.304	Forbidden	300 pounds	1,2	4	
	Ethylene chlorohydrin	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1	Segregation same as for flammable liquids
	Ethylene diamine	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1,2	Stow away from oxidizing materials
AW	Ethylene dibromide (1,2-dibromethane)	ORM-A	None	173.505	173.620	1 quart	55 gallons	1,2	1,2	Stow away from living quarters
	Ethylene dichloride	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Ethylene glycol diethyl ether (*diethyl "Cellosolve"*)	Combustible liquid	None	173.118a				1,2	1,2	
	Ethylene glycol monoethyl ether (*"Cellosolve"*)	Combustible liquid	None	173.118a				1,2	1,2	
	Ethylene glycol monoethyl ether acetate (*"Cellosolve acetate"*)	Combustible liquid	None	173.118a				1,2	1,2	
	Ethylene glycol monomethyl ether (*methyl "Cellosolve"*)	Combustible liquid	None	173.118a				1,2	1,2	
	Ethylene glycol monomethyl ether acetate (*methyl "Cellosolve acetate"*)	Combustible liquid	None	173.118a				1,2	1,2	
	Ethylene imine, inhibited	Flammable liquid	Flammable liquid and Poison	None	173.139	Forbidden	5 pints	1,2	1	
	Ethylene oxide	Flammable liquid	Flammable liquid	None	173.124	Forbidden	173.124	1,2	1	Segregation same as for flammable gases
	Ethyl ether. See Ether									
	Ethyl formate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Ethylhexaldehyde	Combustible liquid	None	173.118a				1,2	1,2	
	Ethyl lactate	Combustible liquid	None	173.118a				1,2	1,2	
	Ethyl mercaptan	Flammable liquid	Flammable liquid	None	173.141	Forbidden	10 gallons	1,2	1	
	Ethyl methyl ether	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,3	1	Segregation same as for flammable gases
	Ethyl methyl ketone	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Ethyl nitrate (*nitric ether*)	Flammable liquid	Flammable liquid	173.118	173.119	Forbidden	Forbidden	1,2	1	
	Ethyl nitrite (*nitrous ether*)	Flammable liquid	Flammable liquid	None	173.119	Forbidden	Forbidden	1,3	5	
	Ethyl phenyl dichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	3	
	Ethyl phosphonothioic dichloride, anhydrous	Corrosive material	Corrosive	173.244	173.245 173.245a	1 quart	1 quart	1	4	
	Ethyl phosphonous dichloride, anhydrous	Corrosive material	Corrosive	173.244	173.245 173.245a	1 quart	1 quart	1	4	
	Ethyl phosphorodichloridate	Corrosive material	Corrosive	173.244	173.245 173.245a	1 quart	1 quart	1	4	
	Ethyl propionate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Ethyl silicate (*tetra ethyl ortho silicate*)	Combustible liquid	None	173.118a				1,2	1,2	
	Ethyl trichlorosilane	Flammable liquid	Flammable liquid	None	173.135	Forbidden	5 pints	1,2	1	
	Etiologic agent, n.o.s.	Etiologic agent	Etiologic agent	173.386	173.387	173.386	4 liters			Not permitted except under specific conditions approved by the Department
W	Excelsior (shredded wood) *when dry, clean, and free from oil*	ORM-C	None	173.505	173.980			1,3	1,3	Stow away from organic, corrosive, or oxidizing materials
W	Exothermic ferrochrome	ORM-C	None	173.505	173.985			1	1	
W	Exothermic ferromanganese. *See* Exothermic ferrochrome									
W	Exothermic silicon chrome. *See* Exothermic ferrochrome									
	Explosive auto alarm	Class C explosive	Explosive C	None	173.111	50 pounds	150 pounds	1,2	1,2	
	Explosive bomb	Class A explosive	Explosive A	None	173.56	Forbidden	Forbidden	1,2	5	Magazine stowage authorized. No other cargo may be stowed in the same hold with these items
	Explosive cable cutter	Class C explosive	Explosive C	None	173.102	50 pounds	150 pounds	1,3	1,3	
	Explosive mine	Class A explosive	Explosive A	None	173.56	Forbidden	Forbidden	1,2	5	Magazine stowage authorized. No other cargo may be stowed in the same hold with this material
	Explosive power device, Class B	Class B explosive	Explosive B	None	173.94	Forbidden	150 pounds	1,2	5	

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Explosive power device, Class C	Class C explosive	Explosive C	None	173.102	50 pounds	150 pounds	1,3	1,3	
	Explosive projectile	Class A explosive	Explosive A	None	173.56	Forbidden	Forbidden	1,2	5	Magazine stowage authorized. No other cargo may be stowed in the same hold with this material
	Explosive release device	Class C explosive	Explosive C	None	173.102	50 pounds	150 pounds	1,3	1,3	
	Explosive rivet	Class C explosive	Explosive C	None	173.100	50 pounds	150 pounds	1,2	1,2	
	Explosive, sample for laboratory examination			173.86		Forbidden	173.86			
	Explosives, Class A			173.53						
	Explosives, Class B			173.88						
	Explosives, Class C			173.100						
	Explosive torpedo	Class A explosive	Explosive A	None	173.56	Forbidden	Forbidden	1,2	5	Magazine stowage authorized. No other cargo may be stowed in the same hold with this material
•	Extract, liquid, flavoring	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Fabric with animal or vegetable oil. See Fibers or fabric containing not more than 5% animal or vegetable fat									
AW	Feed, wet, mixed	ORM-C	None	173.505	173.990	Forbidden	Forbidden	3	3	Stow in cool, dry, well ventilated compartment. Do not stow bags over ten tiers high without flooring off. Do not overstow
W	Felt, waste. *See* Cotton waste									
	Felt, waste, wet. *See* Waste wool, wet									
	Ferric arsenate, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Ferric arsenite, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
A	Ferric chloride, solid, *anhydrous*	ORM-B	None	173.505	173.510	25 pounds	100 pounds			
•	Ferric chloride solution	Corrosive material	Corrosive	173.244	173.245 173.245a	1 quart	10 quarts	1,2	1,2	
W	Ferrophosphorus	ORM-A	None	173.505	173.635			1,2	1,2	Keep dry. Stow away from living quarters
AW	Ferrosilicon, *containing 30% or more but not more than 70% silicon*	ORM-A	None	173.505	173.510 173.645	Forbidden	25 pounds	1,2	1,2	Keep dry. Stow away from living quarters. Segregation same as for flammable solids labeled Dangerous When Wet
	Ferrous arsenate (*iron arsenate*), solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Fertilizer ammoniating solution *containing free ammonia (more than 25.3 p.s.i.g.)*	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314	Forbidden	300 pounds	1,2	4	
	Fertilizer, tankage. *See* Garbage, tankage									
W	Fibers (*jute, hemp, flax, sisal, coir, kapok, and similar vegetable fibers*)	ORM-C	None	173.505	173.965			1,2	1,2	Stow away from animal or vegetable oils. Segregation same as for flammable solids
	Fibers, burnt	Flammable solid	Flammable solid	None	173.169	Forbidden	Forbidden	1,2	1,2	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Fibers or fabric, containing not more than 5% animal or vegetable oil	Flammable solid	Flammable solid	None	173.170	Forbidden	Forbidden	1,2	1,2	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Film (nitrocellulose)	Flammable solid	Flammable solid	None	173.177 173.178 173.180	50 pounds	200 pounds	1,3	1,3	Stow away from other flammable cargo or substances
	Film, photographic, (including scrap film), safety, nonflammable, or slow burning. Not subject to requirements of this subchapter									
	Firecracker. See Fireworks, common or special									
	Firecracker salute. See Fireworks, common or special									
•	Fire extinguisher	Nonflammable gas	Nonflammable gas	173.306		150 pounds	300 pounds	1,2	1,2	
	Fire extinguisher charge containing not more than 50 grains of propellant explosive per unit. Not subject to requirements of this subchapter									
	Fire extinguisher charge containing sulfuric acid	Corrosive material	Corrosive	173.261		1 quart	1 gallon	1,2	1,2	
	Fireworks, common	Class C explosive	Explosive C	None	173.100 173.108	50 pounds	200 pounds	1,3	1,3	Passenger vessels in metal lockers only
	Fireworks, exhibition display piece. See Fireworks, special									
	Fireworks, special	Class B explosive	Explosive B	None	173.88 173.91	Forbidden	200 pounds	3	3	Passenger vessels in metal lockers only. Toy torpedoes must not be packed with other special fireworks

§172.101 Hazardous Materials Table (cont'd)

(1) */W/A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
W	Fish meal *or* fish scrap containing 6% to 12% water	ORM-C	None	173.505	173.995			1,2	1,2	Segregation same as for flammable solids. Separate from flammable gases or liquids, oxidizing materials, or organic peroxides. *Use double strip stowage* for cargo 6-12 percent moisture containing not more than 12 percent fat. *Use single strip stowage* for cargo 6-12 percent moisture containing 12-15 percent fat
	Fish meal *or* fish scrap containing less than 6% or more than 12% water	Flammable solid	Flammable solid	None	173.171	Forbidden	Forbidden	1,2	1,2	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Fissile radioactive material. *See* Radioactive material, fissile									
*	Flame retardant compound liquid	Corrosive material	Corrosive	173.244	173.291	1 quart	10 gallons	1,2	1,2	
	Flammable liquid, n.o.s.	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Flammable solid, n.o.s.	Flammable solid	Flammable solid	173.153	173.154	25 pounds	25 pounds	1,2	1,2	
	Flare. *See* Fireworks, common									
	Flare, airplane. *See* Fireworks, special									
	Flash cartridge. *See* Fireworks, special *or* Low explosives									
	Flash cracker. *See* Fireworks, common *or* special									
	Flash powder. *See* Fireworks, special *or* Low explosives									
	Flax. *See* Fibers									
	Flexible linear shaped charge, metal clad	Class C explosive	Explosive C	None	173.104	50 pounds	300 pounds	1,3	1,3	
	Flowers of sulfur. *See* Sulfur									
	Flue dust, poisonous	Poison B	Poison	173.364	173.368	50 pounds	300 pounds	1,2	1,2	
	Fluoboric acid	Corrosive material	Corrosive	173.244	173.283	1 quart	1 gallon	1,2	1,2	
	Fluoric acid. *See* Hydrofluoric acid									
	Fluorine	Nonflammable gas	Poison and Oxidizer	None	173.302	Forbidden	Forbidden	1	5	Stow in well ventilated space away from organic materials
	Fluorophosphoric acid, anhydrous. *See* Monofluorophosphoric acid, anhydrous									
	Fluorosilicic acid. *See* Hydrofluosilicic acid									
	Fluorosulfonic acid	Corrosive material	Corrosive	None	173.274	Forbidden	1 gallon	1	5	Keep dry
AW	Formaldehyde, as formalin solution (*in containers of 110 gallons or less*)	ORM-A	None	173.505	173.510			1,2	4	
	Formaldehyde, as formalin solution (*in containers over 110 gallons*)	Combustible liquid	None	173.118a				1,2	1,2	
	Formalin. *See* Formaldehyde solution									
	Formic acid	Corrosive material	Corrosive	173.244	173.245 173.289	1 quart	5 gallons	1,2	1,2	Glass carboys in hampers not permitted under deck
*	Formic acid solution	Corrosive material	Corrosive	173.244	173.245 173.289	1 quart	5 gallons	1,2	1,2	
*	Fuel, aviation, turbine engine	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
*	Fuel oil	Combustible liquid	None	173.118a				1,2	1,2	
	Fuel oil, Diesel. *See* Fuel oil									
	Fuel oil, No. 1, 2, 4 *or* 5	Combustible liquid	None	173.118a				1,2	1,2	
	Fulminate of mercury, dry	Forbidden								
	Fulminate of mercury, wet. *See* Initiating explosive									
	Fumaryl chloride	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1	1	Glass carboys not permitted
*	*Fumigant*				173.152					
*	Furfural	Combustible liquid	None	173.118a				1,2	1	
	Fuse (*railway or highway*)	Flammable solid	Flammable solid	None	173.154a	10 pounds	200 pounds	1,3	1,3	
	Fuse igniter	Class C explosive	Explosive C	None	173.106	50 pounds	150 pounds	1,3	1,3	
	Fuse, instantaneous	Class C explosive	Explosive C	173.100		50 pounds	150 pounds	1,2	1,2	
	Fuse lighter	Class C explosive	Explosive C	None	173.106	50 pounds	150 pounds	1,3	1,3	
	Fusel oil	Combustible liquid	None	173.118a				1,2	1,2	

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Fuse, mild detonating, metal clad	Class C explosive	Explosive C	None	173.104	50 pounds	300 pounds	1,2	1,2	
	Fuse, safety	Class C explosive	Explosive C	173.100		50 pounds	300 pounds	1,2	1,2	
	Fuze, combination	Class C explosive	Explosive C	None	173.105	50 pounds	150 pounds	1,3	1,3	
	Fuze, detonating	Class A explosive	Explosive A	None	173.69	Forbidden	Forbidden	5	5	
	Fuze, detonating, Class C explosive	Class C explosive	Explosive C	None	173.113	50 pounds	150 pounds	1,3	1,3	
	Fuze, detonating, radioactive	Class A explosive	Explosive A	None	173.69	Forbidden	Forbidden	5	5	
	Fuze, percussion	Class C explosive	Explosive C	None	173.105	50 pounds	150 pounds	1,3	1,3	
	Fuze, time	Class C explosive	Explosive C	None	173.105	50 pounds	150 pounds	1,3	1,3	
	Fuze, tracer	Class C explosive	Explosive C	None	173.105	50 pounds	150 pounds	1,3	1,3	
W	Garbage tankage *containing 8% or more water*	ORM-C	None	173.505	173.1000			1,2	1,2	
	Garbage tankage, *containing less than 8% water*	Flammable solid	Flammable solid	None	173.209	Forbidden	Forbidden	1	1	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Gas cylinder, empty. *See* Cylinder, empty									
•	Gas drips, hydrocarbon	Combustible liquid	None	173.118a				1,2	1,2	
•	Gas drips, hydrocarbon	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
•	Gas identification set	Poison A	Poison gas	None	173.331	Forbidden	Forbidden	1	5	
•	Gas identification set	Irritating material	Irritant	None	173.331	Forbidden	Forbidden	1	5	
	Gas mine. *See* Explosive mine									
	Gas oil. *See* Fuel oil									
	Gasoline (*including casing-head and natural*)	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	4	
	Gelatine Dynamite. *See* High explosive									
	Germane	Poison A	Poison gas and Flammable gas	None	173.328	Forbidden	Forbidden	1	5	
	Grenade, empty, primed	Class C explosive	Explosive C	None	173.107	50 pounds	150 pounds	1,3	1,3	
	Grenade, hand or rifle, explosive (*with or without gas, smoke, or incendiary material*)	Class A explosive	Explosive A	None	173.56	Forbidden	Forbidden	1,2	5	No other cargo may be stowed in the same hold with these items
	Grenade, tear gas	Irritating material	Irritant	None	173.385	Forbidden	75 pounds	1,2	1	
	Grenade without bursting charge: With incendiary material (Special fireworks)	Class B explosive	Explosive B	173.91		Forbidden	Forbidden	3	3	Passenger vessels in metal lockers only
	Grenade without bursting charge: With smoke charge (Smoke grenade)	Class C explosive	Explosive C	173.108		50 pounds	150 pounds	1,3	1,3	
	Grenade without bursting charge: With Poison A gas charge	Poison A	Poison gas	173.330		Forbidden	Forbidden			*See* correct shipping name of applicable Poison A material for stowage, special handling, and special segregation requirements
	Grenade without bursting charge: With Poison B charge	Poison B	Poison	173.350		Forbidden	Forbidden			*See* correct shipping name of applicable Poison B material for stowage, special handling, and special segregation requirements
	Guanidine nitrate	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	Separate from nitro-compounds, chlorates, and acids
	Guanyl nitrosamino guanylidene hydrazine. *See* Initiating explosive									
	Guanyl nitrosamino guanyl tetrazene. *See* Initiating explosive									
	Guided missile, without warhead. *See* Rocket motor, Class A explosive *or* Rocket motor, class B explosive									
	Guided missile with warhead. *See* Rocket ammunition with explosive, illuminating, gas, incendiary, *or* smoke projectile									
	Guncotton. *See* High explosive									
	Hafnium metal, dry (*See Note 3, Sec. 173.214*)	Flammable solid	Flammable solid	None	173.214	Forbidden	75 pounds	1	5	
	Hafnium metal, wet	Flammable solid	Flammable solid	None	173.214	Forbidden	150 pounds	1,2	5	
	Hair, wet	Flammable solid	Flammable solid	None	173.172	Forbidden	Forbidden	1,2	5	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides

22 §172.101 Hazardous Materials Table (cont'd)

(1) °/ W/ A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
	Hand signal device	Class C explosive	Explosive C	None	173.108	50 pounds	200 pounds	1,2	1,2	
W	Hay	ORM-C	None	173.505	173.1005			1,2	1,2	Segregation same as for flammable solids. Stow away from animal or vegetable oils
W	Hay or straw (*loose, wet, or damp*)									Forbidden for water shipment
	Heater for refrigerator car, liquid fuel type (*containing fuel*)	Flammable liquid	Flammable liquid	173.146		Forbidden	Forbidden	1,2	1	
•	Helium	Nonflammable gas	Nonflammable gas	173.306	173.302 173.314	150 pounds	300 pounds	1,2	1,2	
•	Helium-oxygen mixture	Nonflammable gas	Nonflammable gas	173.306	173.302	150 pounds	300 pounds	1,2	1,2	
	Heptane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
W	*Hessian. See* Burlap cloth									
W	Hexachloroethane	ORM-A	None	173.505	173.650			1,2	1,2	
	Hexadecyltrichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
	Hexanes	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,2	5	
	Hexaethyl tetraphosphate and compressed gas mixture	Poison A	Poison gas	None	173.334	Forbidden	Forbidden	1	5	Shade from radiant heat
	Hexaethyl tetraphosphate, liquid	Poison B	Poison	173.345	173.358	Forbidden	1 quart	1	4	
	Hexaethyl tetraphosphate mixture, dry (*containing more than 2% hexaethyl tetraphosphate*)	Poison B	Poison	None	173.377	Forbidden	200 pounds	1,2	5	
•	Hexaethyl tetraphosphate mixture, dry (containing not more than 2% hexaethyl tetraphosphate)	Poison B	Poison	173.377	173.377	50 pounds	200 pounds	1,2	4	
	Hexaethyl tetraphosphate mixture, liquid (*containing more than 25% hexaethyl tetraphosphate*)	Poison B	Poison	None	173.359	Forbidden	1 quart	1,2	5	
•	Hexaethyl tetraphosphate mixture, liquid (containing not more than 25% hexaethyl tetraphosphate)	Poison B	Poison	173.359	173.359	1 quart	1 quart	1,2	4	
	Hexafluorophosphoric acid	Corrosive material	Corrosive and Poison	None	173.275	Forbidden	1 gallon	1,2	1,2	
	Hexafluoropropylene	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314 173.315	150 pounds	300 pounds	1,2	4	
•	Hexaldehyde	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1,2	
	Hexamethylene diamine, solid	Corrosive material	Corrosive	173.244	173.245b	13 pounds	100 pounds	1,2	1,2	
•	Hexamethylene diamine solution	Corrosive material	Corrosive	173.244	173.292	1 quart	10 gallons	1,2	1,2	
	Hexamethylene imine	Corrosive material	Corrosive and Poison	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Hexane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Hexanoic acid	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Hexyltrichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
	High explosive	Class A explosive	Explosive A	None	173.61 to 173.87	Forbidden	Forbidden	6	5	
	High explosive, liquid	Class A explosive	Explosive A	None	173.62	Forbidden	Forbidden	6	5	
•	Hydraulic accumulator. *See* Accumulator, pressurized									
	Hydrazine, anhydrous	Flammable liquid	Flammable liquid and Poison	None	173.276	Forbidden	5 pints	1	1	Segregation same as for corrosives
•	Hydrazine aqueous solution (*containing less than 64% hydrazine*)	Corrosive material	Corrosive	None	173.276	Forbidden	5 pints	1	1	
	Hydrazine solution (*containing 64% or more hydrazine*)	Flammable liquid	Flammable liquid and Poison	None	173.276	Forbidden	5 pints	1	5	Segregation same as for corrosives
•	Hydriodic acid	Corrosive material	Corrosive	173.244	173.245	1 quart	1 gallon	1	1	Glass carboys not permitted on passenger vessel
	Hydrobromic acid, anhydrous. *See* Hydrogen bromide									
	Hydrobromic acid, *more than 49% strength*	Corrosive material	Corrosive	None	173.262	Forbidden	Forbidden	1	1	Glass carboys not permitted on passenger vessel
•	Hydrobromic acid not more than 49% strength	Corrosive material	Corrosive	173.244	173.262	1 quart	1 gallon	1	1	Glass carboys not permitted on passenger vessel
	Hydrocarbon gas, liquefied	Flammable gas	Flammable gas	173.306	173.304 173.314	Forbidden	300 pounds	1,2	1	
•	Hydrocarbon gas, nonliquefied	Flammable gas	Flammable gas	173.306	173.302	Forbidden	300 pounds	1,2	1	

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
*	Hydrochloric (*muriatic*) acid	Corrosive material	Corrosive	173.244	173.263	Forbidden	1 gallon	1	1	Glass carboys not permitted on passenger vessel
	Hydrochloric acid, anhydrous. *See* Hydrogen chloride									
*	Hydrochloric acid mixture	Corrosive material	Corrosive	173.244	173.263	Forbidden	1 gallon	1	1	Glass carboys not permitted on passenger vessel
*	Hydrochloric acid solution, inhibited	Corrosive material	Corrosive	173.244	173.263	Forbidden	1 gallon	1	1	Glass carboys not permitted on passenger vessel
	Hydrocyanic acid, liquefied	Poison A	Flammable gas and Poison gas	None	173.332	Forbidden	Forbidden	1	5	
	Hydrocyanic acid (*prussic*), solution (*5% or more hydrocyanic acid*)	Poison A	Flammable gas and Poison gas	None	173.332	Forbidden	Forbidden	1	5	Shade from radiant heat. Aqueous solutions containing more than 20 percent hydrogen cyanide are not permitted in transportation by water
	Hydrocyanic acid (*prussic*), unstabilized	Forbidden								
	Hydrocyanic acid solution, less than 5% hydrocyanic acid	Poison B	Poison	None	173.351	Forbidden	25 pounds	1	5	Shade from radiant heat
	Hydrofluoric acid, anhydrous. *See* Hydrogen fluoride									
*	Hydrofluoric acid solution	Corrosive material	Corrosive	173.244	173.264	Forbidden	1 gallon	1	4	
*	Hydrofluoric and sulfuric acids, mixture	Corrosive material	Corrosive	None	173.290	Forbidden	1 gallon	1	5	
	Hydrofluoroboric acid. *See* Fluoboric acid									
	Hydrofluorosilicic acid	Corrosive material	Corrosive	None	173.265	1 quart	1 gallon	1,2	1,2	
	Hydrogen	Flammable gas	Flammable gas	173.306	173.302 173.314	Forbidden	300 pounds	1,2	4	
	Hydrogen bromide	Nonflammable gas	Nonflammable gas	173.306	173.304	Forbidden	300 pounds	1	4	
	Hydrogen chloride	Nonflammable gas	Nonflammable gas	173.306	173.304	Forbidden	300 pounds	1	4	
	Hydrogen, cryogenic liquid	Flammable gas	Flammable gas	None	173.316	Forbidden	Forbidden			Forbidden
	Hydrogen fluoride	Corrosive material	Corrosive	None	173.264	Forbidden	110 pounds	1	5	Segregation same as for nonflammable gases
	Hydrogen iodide solution. *See* Hydriodic acid									
	Hydrogen peroxide solution (8% to 40% peroxide)	Oxidizer	Oxidizer	173.244	173.266	1 quart	1 gallon	1,2	1	Shade from radiant heat. Separate from permanganates. Keep away from powdered metals
	Hydrogen peroxide solution (40% to 52% peroxide)	Oxidizer	Oxidizer	173.244	173.266	Forbidden	Forbidden	1	4	Shade from radiant heat. Separate from permanganates. Keep away from powdered metals
	Hydrogen peroxide solution (over 52% peroxide)	Oxidizer	Oxidizer	None	173.266	Forbidden	Forbidden	1	5	Shade from radiant heat. Separate from permanganates. Keep away from powdered metals. Concentrations greater than 60% hydrogen peroxide not permitted on any vessel except under conditions approved by the Department
	Hydrogen selenide	Flammable gas	Flammable gas and Poison	None	173.328	Forbidden	Forbidden	1	5	
	Hydrogen sulfate. *See* Sulfuric acid									
	Hydrogen sulfide	Flammable gas	Flammable gas and Poison	None	173.304 173.314	Forbidden	300 pounds	1	5	
	Hydrosilicofluoric acid. *See* Hydrofluorosilicic acid									
	Hypochlorite solution *containing more than 7% available chlorine by weight*	Corrosive material	Corrosive	173.244	173.277	1 quart	4 gallons	1,2	1	Glass carboys in hampers not permitted under deck
A*	Hypochlorite solution containing not more than 7% available chlorine *by weight*	ORM-B	None	173.505	173.510					
	Igniter	Class C explosive	Explosive C	None	173.106	50 pounds	150 pounds	1,3	1,3	
	Igniter cord	Class C explosive	Explosive C	None	173.100	50 pounds	150 pounds	1,3	1,3	
	Igniter fuse, metal clad	Class C explosive	Explosive C	None	173.106	50 pounds	150 pounds	1,3	1,3	
*	Igniter, jet thrust (jato)	Class A explosive	Explosive A	None	173.79	Forbidden	Forbidden	6	5	
*	Igniter, jet-thrust (jato)	Class B explosive	Explosive B	None	173.92	Forbidden	550 pounds	1,3	5	
*	Igniter, rocket motor	Class A explosive	Explosive A	None	173.79	Forbidden	Forbidden	6	5	
*	Igniter, rocket motor	Class B explosive	Explosive B	None	173.92	Forbidden	550 pounds	1,3	5	
	Illuminating projectile. *See* Fireworks, special									

24 §172.101 Hazardous Materials Table (cont'd)

(1) °/ W/ A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
	Iminobispropylamine	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Initiating explosive *Diazodinitrophenol*	Class A explosive	Explosive A	None	173.70	Forbidden	Forbidden	6	5	
	Initiating explosive *Fulminate of mercury*	Class A explosive	Explosive A	None	173.71	Forbidden	Forbidden	6	5	
	Initiating explosive *Guanyl nitrosamino guanylidene hydrazine*	Class A explosive	Explosive A	None	173.72	Forbidden	Forbidden	6	5	
	Initiating explosive *Lead azide, dextrinated type only*	Class A explosive	Explosive A	None	173.73	Forbidden	Forbidden	6	5	
	Initiating explosive *Lead mononitroresorcinate*	Class A explosive	Explosive A	None	173.70	Forbidden	Forbidden	6	5	
	Initiating explosive Lead styphnate (*lead trinitroresorcinate*)	Class A explosive	Explosive A	None	173.74	Forbidden	Forbidden	6	5	
	Initiating explosive *Nitro mannite*	Class A explosive	Explosive A	None	173.75	Forbidden	Forbidden	6	5	
	Initiating explosive *Nitrosoguanidine*	Class A explosive	Explosive A	None	173.76	Forbidden	Forbidden	6	5	
	Initiating explosive *Pentaerythrite tetranitrate*	Class A explosive	Explosive A	None	173.77	Forbidden	Forbidden	6	5	
	Initiating explosive Tetrazene (*guanyl nitrosamine guanyl tetrazene*)	Class A explosive	Explosive A	None	173.78	Forbidden	Forbidden	6	5	
•	Ink	Combustible liquid	None	173.118a				1,2	1,2	
•	Ink	Flammable liquid	Flammable liquid	173.118	173.144	1 quart	10 gallons	1,2	1	
•	Insecticide, dry, n.o.s.	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Insecticide, liquefied gas (*containing no Poison A or B material*)	Nonflammable gas	Nonflammable gas	173.306	173.304	150 pounds	300 pounds	1,3	1,3	
	Insecticide, liquefied gas, containing Poison A material *or* Poison B material	Poison A	Poison gas	None	173.329 173.334	Forbidden	Forbidden	1	5	Shade from radiant heat
•	Insecticide, liquid	Combustible liquid	None	173.118a				1,2	1,2	
•	Insecticide, liquid	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
•	Insecticide, liquid, n.o.s.	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1,2	
W	Insulation tape (*varnished cloth type*). *See* Oiled textiles									
	Iodine monochloride	Corrosive material	Corrosive and Poison	None	173.293	Forbidden	1 quart	1	5	Keep dry
	Iodine pentafluoride	Oxidizer	Oxidizer and Poison	None	173.246	Forbidden	100 pounds	1	1	Keep dry
	Iron chloride, solid. *See* Ferric chloride, solid									
	Iron mass *or* sponge, *not properly oxidized*	Flammable solid	Flammable solid	None	173.174	Forbidden	Forbidden	1,2	5	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Iron mass *or* sponge spent	Flammable solid	Flammable solid	None	173.174	Forbidden	Forbidden	1,2	5	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
A	Iron oxide, spent	ORM-C	None			Forbidden	Forbidden			
	Iron sesquichloride, solid. *See* Ferric chloride									
	Irritating agent, n.o.s.	Irritating material	Irritant	173.382		Forbidden	75 pounds	1	1	Stow away from living quarters
	Isobutane *or* Liquefied petroleum gas. *See* Liquefied petroleum gas									
	Isobutyl acetate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Isobutylamine	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Isobutylene or Liquefied petroleum gas. *See* Liquefied petroleum gas									
	Isobutyric acid	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Isobutyric anhydride	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Isooctane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Isooctene	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Isopentane	Flammable liquid	Flammable liquid	173.118	173.119	Forbidden	10 gallons	1,3	4	
	Isopentanoic acid	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Isoprene	Flammable liquid	Flammable liquid	173.118	173.119	Forbidden	10 gallons	1,3	4	
•	Isopropanol. *See* Alcohol, n.o.s.									

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Isopropyl acetate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Isopropyl acid phosphate solid	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	
	Isopropylamine	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,3	5	
	Isopropyl mercaptan	Flammable liquid	Flammable liquid	None	173.141	Forbidden	10 gallons	1,3	5	
	Isopropyl nitrate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Isopropyl percarbonate, stabilized	Organic peroxide	Organic peroxide	None	173.282	Forbidden	Forbidden	1,2	1	
	Isopropyl phosphoric acid, solid. *See* Isopropyl acid phosphate, solid									
	Jet thrust igniter. *See* Igniter, jet thrust									
*	Jet thrust unit (*jato*)	Class A explosive	Explosive A	None	173.79	Forbidden	Forbidden	6	5	
*	Jet thrust unit (*jato*)	Class B explosive	Explosive B	None	173.92	Forbidden	550 pounds	1,3	5	
W	*Jute*. *See* Fibers									
W	*Kapok*. *See* Fibers									
	Kerosene	Combustible liquid	None	173.118a				1,2	1,2	
*	Lacquer. *See* *Paint, enamel, lacquer, stain, etc.									
*	Lacquer base, liquid. *See* *Paint, enamel, lacquer, stain, etc.									
*	Lacquer base, *or* lacquer chips, dry	Flammable solid	Flammable solid	173.153	173.175	25 pounds	100 pounds	1	1	
*	Lacquer base *or* lacquer chips, plastic (*wet with alcohol or solvent*)	Flammable liquid	Flammable liquid	173.118	173.127	1 quart	25 pounds	1,2	1	
*	Lacquer removing, reducing, *or* thinning compound. *See* Compound, lacquer, paint, *or* varnish, *etc.*, removing, reducing *or* thinning liquid									
	Lauroyl peroxide	Organic peroxide	Organic peroxide	173.153	173.157 173.158	2 pounds	25 pounds	1,2	1	
	Lead arsenate, solid	Poison B	Poison	173.364	173.367	50 pounds	200 pounds	1,2	1,2	
	Lead arsenite, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Lead azide. *See* Initiating explosive									
A	Lead chloride	ORM-B	None	173.505	173.510 173.800	25 pounds	100 pounds			
	Lead cyanide	Poison B	Poison	173.370		25 pounds	No limit	1,2	1,2	Stow away from acids
W	Lead dross	ORM-C	None	173.505	173.1010			1,2	1,2	Segregation same as for corrosive materials
	Lead mononitroresorcinate. *See* Initiating explosive									
	Lead nitrate	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	Stow away from foodstuffs
	Lead peroxide	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	Stow away from foodstuffs
W	Lead scrap. *See* Lead dross									
	Lead styphnate (*lead trinitroresorcinate*). *See* Initiating explosive									
	Lead sulfate, solid (*containing more than 3% free acid*)	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	
*	Leather bleach *or* dressing	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
*	Leather bleach *or* dressing	Combustible liquid	None	173.118a				1,2	1,2	
	Lighter fluid	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Lime-nitrogen. *See* Calcium cyanamide, not hydrated, etc.									
	Lime, unslaked. *See* Calcium oxide									
A	Lindane	ORM-A	None	173.505	173.510					
	Liquefied hydrocarbon gas. *See* Hydrocarbon gas, liquefied									
*	Liquefied nonflammable gas (*charged with nitrogen, carbon dioxide, or air*)	Nonflammable gas	Nonflammable gas	173.306	173.304	30 pounds	30 pounds	1,2	1,2	
	Liquefied petroleum gas	Flammable gas	Flammable gas	173.306	173.304 173.314 173.315	Forbidden	100 pounds	1,2	1	
	Liquid other than one classed as flammable, corrosive, poison or irritant, charged with nitrogen, carbon dioxide, or air. *See* Compressed gas n.o.s.									

§172.101 Hazardous Materials Table (cont'd)

(1) °/W/A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging require-ments	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
	Lithium acetylide-ethylene diamine complex	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solid labeled Dangerous When Wet
	Lithium aluminum hydride	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solid labeled Dangerous When Wet
	Lithium aluminum hydride, ethereal	Flammable liquid	Flammable liquid	None	173.137	Forbidden	1 quart	1	5	Segregation same as for flammable solids labeled Dangerous When Wet
	Lithium amide, powdered	Flammable solid	Flammable solid	173.153	173.168	25 pounds	100 pounds	1,2	4	Segregation same as for flammable solids labeled Dangerous When Wet
	Lithium borohydride	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet
	Lithium ferro silicon	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet
	Lithium hydride	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet
	Lithium hydride in fused solid form	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	100 pounds	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet
	Lithium hypochlorite compound, dry (*containing more than 39% available chlorine*)	Oxidizer	Oxidizer	173.153	173.217	50 pounds	100 pounds	1,2	1,2	
	Lithium metal	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet
	Lithium metal, in cartridges	Flammable solid	Flammable solid and Dangerous when wet	173.206		1 pound	25 pounds	1,2	4	Segregation same as for flammable solids labeled Dangerous When Wet
	Lithium nitride	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet
	Lithium peroxide	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	Keep dry
	Lithium silicon	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	1,2	Segregation same as for flammable solids labeled Dangerous When Wet
	London purple, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Low blasting explosive. See Low explosive									
	Low explosive	Explosive A	Explosive A	None	173.60	Forbidden	Forbidden	1	5	
	Lye. See Sodium hydroxide, solid									
	Magnesium aluminum phosphide	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	1,2	Segregation same as for flammable solids labeled Dangerous When Wet
	Magnesium arsenate, solid	Poison B	Poison	173.364	173.367	50 pounds	200 pounds	1,2	1,2	
	Magnesium dross, wet or hot	Forbidden		173.173						
°	Magnesium, metal (*powdered, pellets, turnings, or ribbons*)	Flammable solid	Flammable solid and Dangerous when wet	173.153	173.220	25 pounds	100 pounds	1,2	1,2	Segregation same as for flammable solids labeled Dangerous When Wet
	Magnesium nitrate	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
	Magnesium perchlorate	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,3	1,3	Stow away from powdered metals
	Magnesium peroxide, solid	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	Keep dry
°	Magnesium scrap (*borings, clippings, shavings, sheet, turnings, or scalpings*)	Flammable solid	Flammable solid and Dangerous when wet	173.153	173.220	Forbidden	Forbidden	1,2	1,2	Segregation same as for flammable solids labeled Dangerous When Wet
A	Magnetized material	ORM-C	Magnetized material	None	173.1020					
A	Malathion	ORM-A	None	173.505	173.510					
A	Manganese dioxide	ORM-B	None	173.505	173.510					
	Matches, block. See Matches, strike anywhere									

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Matches, safety, *book, card, or strike-on-box*	Flammable solid	Flammable solid	173.176		50 pounds	50 pounds	1,2	1	
	Matches, strike anywhere	Flammable solid	Flammable solid	None	173.176	Forbidden	Forbidden	1,2	1	
	Matting acid. *See* Sulfuric acid									
*	Medicines, n.o.s.	Combustible liquid	None	173.118a				1,2	1,2	
*	Medicines, n.o.s.	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
*	Medicines, n.o.s.	Flammable solid	Flammable solid	173.153	173.154	25 pounds	100 pounds	1,2	1,2	
*	Medicines, n.o.s.	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	
*	Medicines, n.o.s., liquid	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1,2	1,2	
*	Medicines, n.o.s., liquid	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,3	1	
*	Medicines, n.o.s., solid	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	Keep dry
*	Medicines, n.o.s., solid	Poison B	Poison	173.364	173.365	50 pounds	100 pounds	1,3	1,3	
	Memtetrahydro phthalic anhydride	Corrosive material	Corrosive	None	173.298	Forbidden	1 quart	1,2	1	
*	Mercaptan mixture, aliphatic (*in containers over 110 gallons*)	Combustible liquid	None	173.118a		Forbidden	10 gallons	1,2	1,2	
AW	Mercaptan mixture, aliphatic (*in containers of 110 gallons or less*) *see 173.141(b)*	ORM-A	None	173.505	173.510	Forbidden	10 gallons	1,3	5	Stow in well ventilated space away from living quarters
*	Mercaptan mixture, aliphatic	Flammable liquid	Flammable liquid	None	173.141	Forbidden	10 gallons	1,3	5	
	Mercuric acetate	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Mercuric-ammonium chloride, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Mercuric benzoate, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Mercuric bromide, solid	Poison B	Poison	173.364	173.365	Forbidden	25 pounds	1,2	1,2	
	Mercuric chloride, solid	Poison B	Poison	173.364	173.372	Forbidden	25 pounds	1,2	1,2	
	Mercuric cyanide, solid	Poison B	Poison	173.370		25 pounds	200 pounds	1,2	1,2	Stow away from acids
	Mercuric iodide, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
*	Mercuric iodide solution	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1,2	
	Mercuric oleate, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Mercuric oxide, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Mercuric oxycyanide, solid	Poison B	Poison	173.364	173.365	25 pounds	200 pounds	1,2	1,2	Stow away from acids
	Mercuric-potassium cyanide, solid	Poison B	Poison	173.364	173.365 173.370	25 pounds	100 pounds	1,2	1,2	Stow away from acids
	Mercuric-potassium iodide, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Mercuric salicylate solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Mercuric subsulfate, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Mercuric sulfate, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Mercuric sulfo cyanate, solid or mercuric thiocyanate, solid	Poison B	Poison	173.364	173.365	50 pounds	100 pounds	1,2	1,2	
	Mercurol, or mercury nucleate, solid	Poison B	Poison	173.364	173.365	50 pounds	100 pounds	1,2	1,2	
	Mercurous acetate, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Mercurous bromide, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Mercurous gluconate, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Mercurous iodide, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Mercurous nitrate, solid	Oxidizer	Oxidizer	173.153	173.154	50 pounds	100 pounds	1,2	1,2	
	Mercurous oxide, black, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Mercurous sulfate, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
*	Mercury compound, n.o.s., solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Mercury fulminate. See Initiating explosive									
A	Mercury, metallic	ORM-B	None	None	173.860	173.860	173.860			
	Mesityl oxide	Flammable liquid	Flammable liquid	None	173.119	1 quart	10 gallons	1,2	1,2	
W	Metal borings, shavings, turnings, *or* cuttings	ORM-C	None	173.505	173.1025			1,2	1,2	Keep dry. Not permitted if temperature of material is at or above 1300DEG0 F
	Methane	Flammable gas	Flammable gas	173.306	173.302	Forbidden	300 pounds	1,2	4	
	Methanol. *See* Methyl alcohol									
	Methyl acetate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Methyl acetone	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Methylacetylene-propadiene, stabilized	Flammable gas	Flammable gas	173.306	173.304 173.314 173.315	Forbidden	300 pounds	1,2	1	
	Methyl acrylate, inhibited	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Methylal	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,3	5	
	Methyl alcohol	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Methylamine, anhydrous *or* Monomethylamine	Flammable gas	Flammable gas	173.306	173.304 173.314 173.315	Forbidden	500 pounds	1	4	
	Methyl amyl acetate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1,2	
	Methyl amyl ketone	Combustible liquid	None	173.118a				1,2	1,2	
	Methyl bromide and ethylene dibromide mixture, liquid	Poison B	Poison	None	173.353	Forbidden	55 gallons	1	1	
	Methyl bromide and more than 2% chloropicrin mixture, liquid	Poison B	Poison	None	173.353	Forbidden	Forbidden	1	5	Shade from radiant heat
	Methyl bromide and nonflammable, nonliquefied compressed gas mixture, liquid (*Pressure not exceeding 40 psia at 70 DEG F*)	Poison B	Poison	None	173.353	Forbidden	300 pounds	1	5	Stow away from living quarters
	Methyl bromide, liquid (*bromomethane*) (*including up to 2% chloropicrin*)	Poison B	Poison	None	173.353	Forbidden	55 gallons	1	5	Stow away from living quarters. Segregation same as for nonflammable gas
	Methyl butene	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,2	5	
	Methyl butyrate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Methyl cellosolve. See Ethylene glycol monomethyl ether									
	Methyl cellosolve acetate. See Ethylene glycol monomethyl ether acetate									
	Methyl chloride	Flammable gas	Flammable gas	173.306	173.304 173.314 173.315	Forbidden	300 pounds	1,2	4	
*	Methyl chloride-methylene chloride mixture	Flammable gas	Flammable gas	173.306	173.304 173.314	Forbidden	300 pounds	1,2	4	
	Methyl chlorocarbonate. *See* Methyl chloroformate									
A	Methyl chloroform	ORM-A	None	173.505	173.510 173.605	10 gallons	55 gallons			
	Methyl chloroformate	Flammable liquid	Flammable liquid and Poison	None	173.288	Forbidden	5 pints	1,2	1	
	Methylchloromethyl ether, anhydrous	Flammable liquid	Flammable liquid and Poison	None	173.143	Forbidden	Forbidden	1	5	Shade from radiant heat
	Methylcyclohexane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Methylcyclopentane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Methyl dichloroacetate	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1,2	1,2	
	Methyldichloroarsine	Poison A	Poison gas	None	173.328	Forbidden	Forbidden	1	5	Shade from radiant heat
	Methyl dichlorosilane	Flammable liquid	Flammable liquid	None	173.136	Forbidden	5 pints	1,2	1	
	Methylene chloride. *See* Dichloromethane									
	Methyl ethyl ether. *See* Ethyl methyl ether									
	Methyl ethyl ketone	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7)		(8)		
						Maximum quantity in one package		Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Methyl ethyl pyridine	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Methyl formate	Flammable liquid	Flammable liquid	173.118	173.119	Forbidden	10 gallons	1,3	4	
	Methylfuran	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Methylhydrazine	Flammable liquid	Flammable liquid and Poison	None	173.145	Forbidden	5 pints	1,2	1	Stow separate from oxidizing materials and corrosives
	Methyl isopropenyl ketone, inhibited	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Methyl magnesium bromide in ethyl ether *not over 40% concentration*	Flammable liquid	Flammable liquid	None	173.149	Forbidden	Forbidden	1	1	Segregation same as for flammable solids. Separate from flammable gases or liquids, oxidizing materials or organic peroxides
	Methyl mercaptan	Flammable gas	Flammable gas	173.306	173.304 173.314 173.315 Forbidden 300 pounds 1,2 1 Methyl methacrylate monomer, inhibited Flammable liquid 34 Flammable liquid Flammable liquid 173.118 173.119	1 quart	10 gallons	1,2	1	
	Methyl methacrylate monomer, uninhibited (*high-purity, if acceptable under Sec. 173.21 of this subchapter*)	Flammable liquid	Flammable liquid	173.118	173.119	Forbidden	Forbidden	1,2	1	
	Methyl norbornene dicarboxylic anhydride. *See* Memtetrahydro phthalic anhydride									
	Methyl parathion, liquid	Poison B	Poison	None	173.358	Forbidden	1 quart	1,3	1,3	
*	Methyl parathion mixture, dry	Poison B	Poison	173.377		50 pounds	200 pounds	1,2	1,2	
*	Methyl parathion mixture, liquid, (containing 25% or less methyl parathion)	Poison B	Poison	None	173.359	1/2 pint	1 quart	1,2	1,2	
	Methyl parathion mixture, liquid, (*containing over 25% methyl parathion*)	Poison B	Poison	None	173.359	Forbidden	1 quart	1,2	1,2	
	Methylpentadiene	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Methyl pentane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Methyl phosphonothioic dichloride, anhydrous	Corrosive material	Corrosive	173.244	173.245 173.245a	1 quart	1 quart	1	4	
	Methyl phosphonous dichloride	Corrosive material	Corrosive	173.244	173.245 173.245a	1 quart	1 quart	1	4	
	Methyl propionate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Methyl propyl ketone	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Methyl sulfate. *See* Dimethyl sulfate									
	Methyl sulfide. *See* Dimethyl sulfide									
	Methyltrichlorosilane	Flammable liquid	Flammable liquid	None	173.135	Forbidden	10 gallons	1,2	1	
	Methyl vinyl ketone, inhibited	Flammable liquid	Flammable liquid	173.147	173.147	4 ounces	10 gallons	1,2	1	
	Mild detonating fuse, metal clad. *See* Fuse, mild detonating, metal clad									
	Mine, empty			173.55						
	Mine, explosive, with gas material. *See* Explosive mine									
	Mine rescue equipment containing carbon dioxide	Nonflammable gas	Nonflammable gas	173.306		150 pounds	300 pounds	1,2	1,2	
*	Mining reagent, liquid (*containing 20% or more cresylic acid*)	Corrosive material	Corrosive	173.244	173.245 173.249a	1 quart	10 gallons	1,2	1,2	
A	Mipafox	ORM-A	None	173.505	173.510					
	Mixed acid. *See* Nitrating (*mixed*) acid									
A	Molybdenum pentachloride	ORM-B	None	173.505	173.510 173.800	25 pounds	100 pounds			
	Monobromotrifluoromethane	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314	150 pounds	300 pounds	1,2	1,2	

30 §172.101 Hazardous Materials Table (cont'd)

(1) °/W/A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(c) Other requirements
▪	Monochloroacetic acid solution	Corrosive material	Corrosive	173.244	173.294	1 quart	1 quart	1,2	1,2	Glass carboys in hampers not permitted under deck
	Monochlorodifluoromethane	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314 173.315	150 pounds	100 pounds	1,2	1,2	
	Monochloroethylene. *See* Vinyl chloride									
	Monochloropentafluoroethane	Nonflammable gas	Nonflammable gas	173.306	173.304	150 pounds	300 pounds	1,2	1,2	
	Monochlorotetrafluoroethane	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314	150 pounds	300 pounds	1,2	1,2	
	Monochlorotrifluoromethane	Nonflammable gas	Nonflammable gas	173.306	173.304	150 pounds	100 pounds	1,2	1,2	
	Monoethanolamine	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
▪	Monoethanolamine solution	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Monoethylamine	Flammable liquid	Flammable liquid	None	173.148	Forbidden	5 pints	1,2	5	Segregation same as for flammable gas
	Monofluorophosphoric acid, anhydrous	Corrosive material	Corrosive	None	173.275	Forbidden	1 gallon	1,2	1,2	Keep dry
	Monomethylamine, anhydrous	Flammable gas	Flammable gas	173.306	173.304 173.314 173.315	Forbidden	300 pounds	1,2	4	
•	Monomethylamine, aqueous solution	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	Stow away from mercury and its compounds
	Mortar stain, liquid	Combustible liquid	None	173.118a				1,2	1,2	
•	Mortar stain, liquid	Flammable liquid	Flammable liquid	173.118	173.128	1 quart	55 gallons	1,2	1	
	Moth balls. *See* Naphthalene									
	Motion picture film. *See* Film									
	Motor fuel antiknock compound	Poison B	Poison	None	173.354	Forbidden	55 gallons	1	5	If flashpoint less than 141 deg F., segregation same as for flammable liquids
•	Motor fuel n.o.s.	Combustible liquid	None	173.118a				1,2	1,2	
•	Motor fuel, n.o.s.	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Motor, internal combustion			173.120						
	Motor vehicle, *etc., including automobile, motorcycle, truck, tractor, and other self-propelled vehicle or equipment powered by internal combustion engine, when offered new or used for transportation and which contain fuel in the engine or fuel tank or the electric storage battery is connected to either terminal of the electrical system*			173.120	173.257 173.306			1,2	1,2	Not permitted in nonventilated containers
	Muriatic acid. *See* Hydrochloric (muriatic) acid									
•	Naphtha	Combustible liquid	None	173.118a				1,2	1,2	
▪	Naphtha	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
▪	Naphtha distillate	Combustible liquid	None	173.118a				1,2	1,2	
•	Naphtha distillate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
AW	Naphthalene *or* Naphthalin	ORM-A	None	173.505	173.655	25 pounds	100 pounds	1,2	1,2	Segregation same as for flammable solids
•	*Naphtha petroleum*. *See* °Petroleum naphtha									
▪	Naphtha, solvent	Combustible liquid	None	173.118a				1,2	1,2	
▪	Naphtha, solvent	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Natural gasoline. *See* Gasoline									
	Neohexane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
•	Neon	Nonflammable gas	Nonflammable gas	173.306	173.302	150 pounds	300 pounds	1,2	1,2	
	New explosive or explosive device			173.51	173.86					
	Nickel carbonyl	Flammable liquid	Flammable liquid and Poison	None	173.126	Forbidden	Forbidden	1	3	Not permitted on a vessel carrying explosives. Shade from radiant heat. Segregation same as for flammable liquids
	Nickel catalyst, wet, *finely divided, activated, or spent. With not less than 40% water*	Flammable solid	Flammable solid	None	173.233	Forbidden	100 pounds	1,2	1	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Nickel cyanide, solid	Poison B	Poison	173.370		25 pounds	200 pounds	1,2	1,2	Stow away from acids
	Nicotine hydrochloride	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1,2	

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Nicotine, liquid	Poison B	Poison	None	173.358	Forbidden	55 gallons	1,2	1,2	
	Nicotine salicylate	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
*	Nicotine sulfate, liquid	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1,2	
	Nicotine sulfate, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Nicotine tartrate	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Nitrate of ammonia explosives. See High explosive									
*	Nitrate, n.o.s.	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
	Nitrating (*mixed*) acid	Oxidizer	Oxidizer	None	173.267	Forbidden	1 quart	1	5	Segregation same as for corrosive materials
	Nitrating (*mixed*) acid, spent	Corrosive material	Corrosive	None	173.248	Forbidden	1 quart	1	5	
	Nitric acid (*over 40%*)	Oxidizer	Oxidizer and Corrosive	None	173.268	Forbidden	5 pints	1	5	Segregation same as for corrosive materials. Stow away from hydrazine, separate from diethylenetriamine
	Nitric acid, fuming	Oxidizer	Oxidizer and Poison	None	173.268	Forbidden	Forbidden	1	5	Segregation same as for corrosive materials. Stow away from hydrazine, separate from diethylenetriamine
	Nitric acid, 40% or less	Corrosive material	Corrosive	None	173.268	Forbidden	5 pints	1	5	Stow away from hydrazine, separate from diethylenetriamine
	Nitric ether. See Ethyl nitrate									
	Nitric oxide	Poison A	Poison gas	None	173.337	Forbidden	Forbidden	1	5	
	Nitroaniline	Poison B	Poison	173.364	173.373	50 pounds	200 pounds	1,2	1,2	
	p-Nitroaniline. *See* Nitroaniline									
	Nitrobenzol, liquid (*oil of mirbane, nitrobenzene*)	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1,2	
	Nitro carbo nitrate	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
	Nitrocellulose, colloided, granular *or* flake, wet with not less than 20% alcohol *or* solvent, *or* block, wet with not less than 25% alcohol	Flammable liquid	Flammable liquid	173.118	173.127	1 quart	25 pounds	1,2	1	
	Nitrocellulose, colloided, granular *or* flake, wet with not less than 20% water	Flammable solid	Flammable solid	173.153	173.184	25 pounds	100 pounds	1	1	
	Nitrocellulose, dry. See High explosive									
	Nitrocellulose flakes, wet with not less than 20% alcohol *or* solvent	Flammable liquid	Flammable liquid	173.118	173.127	1 quart	25 pounds	1,2	1	
	Nitrocellulose, wet with not less than 10% alcohol *or* solvent	Flammable liquid	Flammable liquid	173.118	173.127	1 quart	25 pounds	1,2	1	
	Nitrocellulose, wet with not less than 20% water	Flammable solid	Flammable solid	173.153	173.184	25 pounds	100 pounds	1	4	
	Nitrochlorobenzene, ortho, liquid	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1,2	
	Nitrochlorobenzene, meta *or* para, solid	Poison B	Poison	173.364	173.374	50 pounds	200 pounds	1,2	1,2	
*	Nitrogen	Nonflammable gas	Nonflammable gas	173.306	173.302 173.314	150 pounds	300 pounds	1,2	1,2	
*	Nitrogen, cryogenic liquid	Nonflammable gas	Nonflammable gas	None	173.304	Forbidden	300 pounds	1,3	1,3	
	Nitrogen dioxide, liquid	Poison A	Oxidizer and Poison gas	None	173.336	Forbidden	Forbidden	1	5	Segregation same as for nonflammable gases. Stow away from organic materials
*	Nitrogen fertilizer solution	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314	150 pounds	300 pounds	1,3	1,3	
	Nitrogen peroxide, liquid	Poison A	Oxidizer and Poison gas	None	173.336	Forbidden	Forbidden	1	5	Segregation same as for nonflammable gas. Stow away from organic materials
	Nitrogen tetroxide, liquid	Poison A	Oxidizer and Poison gas	None	173.336	Forbidden	Forbidden	1	5	Segregation same as for nonflammable gases. Stow away from organic materials
	Nitrogen tetroxide-nitric oxide mixture, *containing up to 33.2% by weight nitric oxide*	Poison A	Oxidizer and Poison gas	None	173.338	Forbidden	Forbidden	1	5	Segregation same as for nonflammable gases. Stow away from organic materials
	Nitroglycerin, liquid, desensitized. See High explosive, liquid									
	Nitroglycerin, liquid, undesensitized	Forbidden		173.51						
	Nitroglycerin, spirits of. See Spirits of nitroglycerin									
	Nitroguanidine, dry. See High explosive									
	Nitroguanidine, wet with not less than 20% water	Flammable solid	Flammable solid	173.153	173.184	25 pounds	100 pounds	1,2	4	
	Nitrohydrochloric acid	Corrosive material	Corrosive	None	173.278	Forbidden	5 pints	1	5	
*	Nitrohydrochloric acid, diluted	Corrosive material	Corrosive	None	173.278	Forbidden	5 pints	1	5	

32 §172.101 Hazardous Materials Table (cont'd)

(1) */W/A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
	Nitromannite. See High explosive									
	Nitromethane	Flammable liquid	Flammable liquid	173.118	173.149a	1 quart	10 gallons	1,2	1,2	
	Nitromuriatic acid. *See* Nitrohydrochloric acid									
	Nitrosoguanidine. *See* Initiating explosive									
	Nitrostarch, dry. *See* High explosive									
	Nitrostarch, wet with not less than 30% alcohol *or* solvent	Flammable liquid	Flammable liquid	173.118	173.127	1 quart	25 pounds	1,2	1	
	Nitrostarch, wet with not less than 20% water	Flammable solid	Flammable solid	173.153	173.184	25 pounds	100 pounds	1	4	
	Nitrosyl chloride	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314	Forbidden	300 pounds	1	4	
	Nitrourea. See High explosive									
	Nitrous oxide	Nonflammable gas	Nonflammable gas	173.306	173.304 173.315	150 pounds	300 pounds	1,2	1,2	Under deck stowage must be in well-ventilated space
	Nitroxylol	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1	
*	Nonliquefied hydrocarbon gas	Flammable gas	Flammable gas	173.306	173.302	Forbidden	300 pounds	1,2	1	
	Nonyl trichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
	Nordhausen acid. *See* Sulfuric acid									
W	Oakum	ORM-C	None	173.505	173.1030			1,2	1,2	
	Octadecyltrichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
	Octane	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Octyl trichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
*	Oil, *described as oil*, n.o.s., petroleum oil, *or* petroleum oil, n.o.s.	Combustible liquid	None	173.118a				1,2	1,2	
*	Oil, *described as oil*, oil, n.o.s., petroleum oil, *or* petroleum oil, n.o.s.	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Oiled clothing (*manufactured article properly dried to prevent spontaneous heating*). *See* Oiled material									
AW	Oiled material (*manufactured article properly dried to prevent spontaneous heating*)	ORM-C	None	173.505	173.1035			1,3	1,3	
	Oiled paper (*manufactured article properly dried to prevent spontaneous heating*). *See* Oiled material									
	Oil of mirbane. See Nitrobenzol, liquid									
	Oil of vitriol. See Sulfuric acid									
	Oil well cartridge	Class C explosive	Class C explosive	None	173.112	50 pounds	150 pounds	1,3	1,3	
	Oleum (*sulfuric acid fuming*)	Corrosive material	Corrosive and Poison	None	173.272	Forbidden	5 pints	1,2	1	Under deck stowage must be in metal drums only. Keep dry
	Organic peroxide, liquid, n.o.s.	Organic peroxide	Organic peroxide	173.153	173.221	Forbidden	1 quart	1,2	1,2	
	Organic peroxide, solid, n.o.s.	Organic peroxide	Organic peroxide	173.153	173.154	Forbidden	25 pounds	1,2	1,2	
*	Organic phosphate compound mixture, dry, n.o.s.	Poison B	Poison	173.377	173.377	50 pounds	200 pounds	1,2	4	
*	Organic phosphate compound mixture, liquid, n.o.s.	Poison B	Poison	None	173.359	Forbidden	1 quart	1,2	5	
	Organic phosphate, liquid, n.o.s.	Poison B	Poison	None	173.358	Forbidden	1 quart	1,2	5	
*	Organic phosphate, n.o.s. mixed with compressed gas	Poison A	Poison gas	None	173.334	Forbidden	Forbidden	1	5	Shade from radiant heat
*	Organic phosphorus compound, liquid, n.o.s. *or* Organic phosphate, liquid, n.o.s.	Poison B	Poison	None	173.358	Forbidden	1 quart	1,2	5	
*	Organic phosphorus compound, solid, n.o.s. *or* Organic phosphate compound mixture, dry, n.o.s.	Poison B	Poison	173.377	173.377	50 pounds	200 pounds	1,2	4	
*	Organic phosphorus compound mixture, liquid, n.o.s. *or* Organic phosphate compound mixture, liquid, n.o.s.	Poison B	Poison	None	173.359	Forbidden	1 quart	1,2	5	
*	Organic phosphorus compound mixture, dry, n.o.s. *or* Organic phosphate compound mixture, dry, n.o.s.	Poison B	Poison	173.377	173.377	50 pounds	200 pounds	1,2	4	
AW	ORM-A n.o.s.	ORM-A	None	173.505	173.510					
AW	ORM-B n.o.s.	ORM-B	None	173.505	173.510					
	ORM-C. See 173.500 & 176.900									
	Orthonitroaniline. *See* Nitroaniline									
	Oxidizer material, n.o.s.	Oxidizer	Oxidizer	173.153	173.154	25 pounds	25 pounds	1,2	1,2	

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
°/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Oxidizer material packed with other articles			173.152						
°	Oxygen	Nonflammable gas	Oxidizer	173.306	173.302 173.314	150 pounds	300 pounds	1,2	1,2	Under deck stowage must be in well ventilated space
°	Oxygen, pressurized liquid	Nonflammable gas	Oxidizer	None	173.304	Forbidden	Forbidden	1,3	1,3	Stow separate from acetylene. Do not overstow with other cargo
°	Paint drier, liquid	Combustible liquid	None	173.118a				1,2	1,2	
°	Paint drier, liquid	Flammable liquid	Flammable liquid	173.118	173.128	1 quart	55 gallons	1,2	1	
°	Paint, enamel, lacquer, stain, shellac, *or* varnish; aluminum, bronze, gold, wood filler, liquid *or* lacquer base, liquid	Combustible liquid	None	173.118a				1,2	1,2	
°	Paint, enamel, lacquer stain, shellac, *or* varnish; aluminum, bronze, gold, wood filler, liquid, *or* lacquer base, liquid	Flammable liquid	Flammable liquid	173.118	173.128	1 quart	55 gallons	1,2	1	
°	*Paint, reducing or thinning compound. See* °Compound, lacquer, paint, *or* varnish, reducing *or* thinning liquid, etc.									
	Paper caps. See Toy caps									
W	Paper scrap (*when dry, clean, and free from oil*)	ORM-C	None	173.505	173.1075			1,2	1,2	
	Paper stock, wet	Flammable solid	Flammable solid	None	173.185	Forbidden	Forbidden	1,2	1,2	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Paper waste (*when dry, clean, and free from oil*). *See* Paper scrap									
	Paper waste, wet. *See* Waste paper, wet									
	Paraldehyde	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	55 gallons	1,2	1,2	
	Paramenthane hydroperoxide	Organic peroxide	Organic peroxide	173.153	173.224	1 quart	1 quart	1,2	4	
	Paranitroaniline, solid. *See* Nitroaniline									
	Parathion and compressed gas mixture	Poison A	Poison gas	None	173.334	Forbidden	Forbidden	1,3	5	
	Parathion, liquid	Poison B	Poison	None	173.358	Forbidden	1 quart	1,3		
°	Parathion mixture, dry	Poison B	Poison	173.377		50 pounds	200 pounds	1,3	1,3	
	Parathion mixture, liquid	Poison B	Poison	None	173.359	Forbidden	1 quart	1,3	1,3	
	Paris green, solid. *See* Copper acetoarsenite, solid									
	Pentaborane	Flammable liquid	Poison and flammable liquid	None	173.138	Forbidden	Forbidden	1	5	Segregation same as for flammable solids. Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Pentachlorophenol	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1,2	
	Pentaerythrite tetranitrate. See Initiating explosive									
	Pentaerythrite tetranitrate, desensitized, wet. See High explosive									
	Pentane	Flammable liquid	Flammable liquid	173.118	173.119	Forbidden	10 gallons	1,3	4	
	Pentolite, dry. See High explosive									
	Peracetic acid solution, *not over 40% peracetic acid and not over 6% hydrogen peroxide*	Organic peroxide	Organic peroxide	173.223	173.223	1 pint	5 pints	1	4	Shade from radiant heat
°	Perchlorate, n.o.s.	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,3	1,3	Stow away from powdered metals
	Perchloric acid, *exceeding 50% but* not exceeding 72% strength	Oxidizer	Oxidizer	None	173.269	Forbidden	5 pints	1	5	Segregation same as for corrosive materials. Stow away from hydrazine
	Perchloric acid exceeding 72% strength	Forbidden								
°	Perchloric acid, not over 50% acid	Oxidizer	Oxidizer	173.244	173.269	Forbidden	5 pints	1	1	Segregation same as for corrosive materials. Stow away from hydrazine
	Perchloro-methyl-mercaptan	Poison B	Poison	173.345	173.360	Forbidden	10 pounds	1	4	
	Percussion cap	Class C explosive	Explosive C	None	173.107	50 pounds	150 pounds	1,3	1,3	
	Percussion fuze	Class C explosive	Explosive C	None	173.105	50 pounds	150 pounds	1,3	1,3	
A	Perfluoro-2-butene	ORM-A	None	173.505	173.510 173.605	10 gallons	55 gallons			
°	Permanganate, n.o.s.	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	Separate from ammonium compounds, hydrogen peroxide, and acids
	Permanganate of potash. See Potassium permanganate									
°	Peroxide, organic, liquid *or* solution, n.o.s.	Flammable liquid	Organic peroxide and flammable liquid	None	173.119	Forbidden	1 quart	1,2	5	Stow separate from combustible materials, explosives, or acids

§172.101 Hazardous Materials Table (cont'd)

(1) °/ W/ A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
°	Peroxide, organic, liquid *or* solution, n.o.s.	Organic peroxide	Organic peroxide	173.153	173.221	Forbidden	1 quart	1,2	1	Stow separate from combustible materials, explosives, or acids
	Peroxide, organic, solid, n.o.s.	Organic peroxide	Organic peroxide	173.153	173.154	Forbidden	25 pounds	1,2		Stow separate from combustible materials, explosives, or acids
W	Pesticide, water reactive, *including but not limited to fungicides, and herbicides, etc., which contain manganese ethylenebisdithio carbamate*	ORM-C	None	173.505	173.1040			2	1	Keep dry
W	Petroleum coke (calcined)	ORM-C								Not subject to Parts 170-189 of this subchapter if shipped below 130 deg F. Shipments are permitted at higher temperatures only when specifically authorized in writing by the Department
W	Petroleum coke (*uncalcined*)	ORM-C	None	173.505	173.1045			1,2	1,2	Not permitted if temperature of material is at or above 130 deg F.
	Petroleum crude. *See* Crude oil									
°	Petroleum distillate	Combustible liquid	None	173.118a				1,2	1,2	
°	Petroleum distillate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Petroleum ether	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	4	
	Petroleum gas, liquefied. *See* Liquefied petroleum gas									
°	Petroleum naphtha	Combustible liquid	None	173.118a				1,2	1,2	
°	Petroleum naphtha	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
A	Phencapton	ORM-A	None	173.505	173.510					
	Phenol. *See* Carbolic acid									
	Phenyl dichloro arsine	Poison B	Poison	None	173.355	Forbidden	30 gallons	1	5	
A	Phenylenediamine, meta or para, solid	ORM-A	None	173.505	173.510					
	Phenyl trichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
	Phosgene (diphosgene)	Poison A	Poison gas	None	173.333	Forbidden	Forbidden	1	5	
	Phosphine	Poison A	Flammable gas and Poison gas	None	173.328	Forbidden	Forbidden	1	5	
°	Phosphoric acid	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	Glass carboys in hampers not permitted under deck
	Phosphoric acid triethyleneimine. *See* Tris-(1-aziridinyl phosphine oxide)									
	Phosphoric anhydride (*phosphorus pentoxide*)	Corrosive material	Corrosive	None	173.188	Forbidden	100 pounds	1,2	1,2	Keep dry. Glass bottles not permitted under deck
	Phosphorus, amorphous, red	Flammable solid	Flammable solid	None	173.189	Forbidden	11 pounds	1,2	1,2	
	Phosphorus bromide. *See* Phosphorus tribromide									
	Phosphorus chloride. *See* Phosphorus trichloride									
	Phosphorus heptasulfide	Flammable solid	Flammable solid	None	173.225	Forbidden	10 pounds	1,2	1	Separate from oxidizing materials
	Phosphorus oxybromide	Corrosive material	Corrosive	None	173.271	Forbidden	1 quart	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Phosphorus oxychloride	Corrosive material	Corrosive	None	173.271	Forbidden	1 quart	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Phosphorus pentachloride, solid	Corrosive material	Corrosive and Poison	None	173.191	Forbidden	5 pounds	1	1	Keep dry
	Phosphorus pentasulfide	Flammable solid	Flammable solid, and Dangerous when wet	None	173.225	Forbidden	11 pounds	1,2	1,2	Separate from oxidizing material
	Phosphorus sesquisulfide	Flammable solid	Flammable solid, and Dangerous when wet	None	173.225	Forbidden	11 pounds	1,2	1	Separate from oxidizing materials
	Phosphorus tribromide	Corrosive material	Corrosive	None	173.270	Forbidden	1 quart	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Phosphorus trichloride	Corrosive material	Corrosive and Poison	None	173.271	Forbidden	1 quart	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Phosphorus trisulfide	Flammable solid	Flammable solid	None	173.225	Forbidden	10 pounds	1,2	1	Separate from oxidizing materials
	Phosphorus, white *or* yellow, dry	Flammable solid	Flammable solid and Poison	None	173.190	Forbidden	Forbidden	1,2	5	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Phosphorus, white *or* yellow, in water	Flammable solid	Flammable solid and Poison	None	173.190 173.232	Forbidden	11 pounds	1,2	1	Separate from flammable gases or liquids, oxidizing materials or organic peroxides

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Phosphoryl chloride. *See* Phosphorus oxychloride									
	Photographic film. *See* Film									
	Photographic flash powder. *See* Fireworks, special *or* Low explosives									
	Picrate, dry. *See* High explosive									
	Picrate of ammonia. *See* High explosive									
	Picric acid, dry. *See* High explosive									
	Picric acid, wet, with not less than 10% water	Flammable solid	Flammable solid	None	173.192 173.193	1 pound	25 pounds	1	5	Under deck stowage permitted on cargo vessels if wet with more than 30% water. Stow away from heavy metals and their compounds
	Picric acid, wet with not less than 10% water, over 25 pounds. *See* High explosive									
	Pine oil	Combustible liquid	None	173.118a				1,2	1,2	
	Pinwheels. *See* Fireworks, common									
	Pivaloyl chloride. *See* Trimethyl acetylchloride									
•	Plastic solvent, n.o.s.	Combustible liquid	None	173.118a				1,2	1,2	
•	Plastic solvent, n.o.s.	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
•	Plutonium nitrate solution	Radioactive material	Radioactive (See Sec. 172.403)	173.393	173.396			1,2	1,2	
	Poisonous liquid, n.o.s.	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1	
	Poisonous liquid *or* gas, n.o.s.	Poison A	Poison gas	None	173.328	Forbidden	Forbidden	1	5	
	Poisonous solid, n.o.s.	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1	
•	Polish, metal, stove, furniture *or* wood, liquid	Combustible liquid	None	173.118a				1,2	1,2	
•	Polish, metal, stove, furniture *or* wood, liquid	Flammable liquid	Flammable liquid	173.118	173.129 1 quart	55 gallons		1,2	1	
*	*Polymerizable material*			173.21						
	Potassium arsenate, solid	Poison B	Poison	173.364 173.365		50 pounds	200 pounds	1,2	1,2	
	Potassium arsenite, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
*	Potassium bifluoride solution. *See* *Potassium hydrogen fluoride solution									
	Potassium bromate	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	Separate from ammonium compounds. Stow away from powdered metals
	Potassium chlorate (*potash chlorate*)	Oxidizer	Oxidizer	173.153	173.163	25 pounds	100 pounds	1,2	1,2	Separate from ammonium compounds. Stow away from powdered metals
	Potassium cyanide, solid	Poison B	Poison	173.370		25 pounds	200 pounds	1,2	1,2	Stow away from acids
•	Potassium cyanide solution	Poison B	Poison	173.345	173.352	55 gallons	1 quart	1,2	1,2	Stow away from acids
	Potassium dichloro isocyanurate. *See* Potassium dichloro triazinetrione									
	Potassium dichloro-s-triazinetrione, *dry (containing more than 39% available chlorine)*	Oxidizer	Oxidizer	173.153	173.217	50 pounds	100 pounds	1,2	1,2	
A	Potassium dichromate	ORM-A	None	173.505	173.510					
A	Potassium fluoride	ORM-B	None	173.505	173.510					
*	Potassium fluoride solution	Corrosive material	Corrosive	173.244	173.249	1 quart	5 gallons	1,2	1,2	
	Potassium hydrate. *See* Caustic potash, dry, etc.									
•	Potassium hydrogen fluoride solution	Corrosive material	Corrosive	173.244	173.249	1 quart	5 gallons	1,2	1,2	
A	Potassium hydrogen sulfate, solid	ORM-B	None	173.505	173.510 173.800	25 pounds	100 pounds			
	Potassium hydroxide, dry solid, flake, bead, *or* granular	Corrosive material	Corrosive	173.244	173.245b	15 pounds	100 pounds	1,2	1,2	Keep dry. Do not stow with metals or alloys such as brass, copper, tin, zinc, aluminum, solder, or lead
•	Potassium hydroxide, liquid *or* solution	Corrosive material	Corrosive	173.244	173.249	1 quart	10 gallons	1,2	1,2	
*	Potassium hypochlorite solution. *See* Hypochlorite solutions containing more than 7% available chlorine by weight									
A	Potassium metabisulfite	ORM-B	None	173.505	173.510					
	Potassium, metal	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard Class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Potassium, metal liquid alloy	Flammable solid	Flammable solid and Dangerous when wet	None	173.202	Forbidden	1 pound	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet
	Potassium nitrate	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
	Potassium nitrite	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	Separate from ammonium compounds and cyanides. Stow away from foodstuffs
	Potassium nitrate mixed (*fused*) with sodium nitrite	Oxidizer	Oxidizer	173.153	173.183	25 pounds	100 pounds	1,2	1,2	Separate from ammonium compounds and cyanides. Stow away from foodstuffs
	Potassium perchlorate	Oxidizer	Oxidizer	173.153	173.219	25 pounds	100 pounds	1,3	1,3	Stow away from powdered metals
	Potassium permanganate	Oxidizer	Oxidizer	173.153	173.154 173.194	25 pounds	100 pounds	1,2	1,2	Separate from ammonium compounds and hydrogen peroxide
	Potassium peroxide	Oxidizer	Oxidizer	None	173.154	Forbidden	100 pounds	1,2	1,2	Keep dry
	Potassium sulfide	Flammable solid	Flammable solid	173.153	173.207	25 pounds	100 pounds	1,2	1,2	Separate from liquid acids, flammable gases or liquids, oxidizing materials or organic peroxides
	Pressurized product. See Compressed gas, n.o.s.									
	Primer. See Cannon primer, combination primer, or small-arm primer									
	Primer, detonating. See Detonating primer									
	Projectile, explosive. See Explosive projectile									
	Projectile, gas, nonexplosive. See Chemical ammunition, containing Poison or Irritating Material									
	Projectile, gas, smoke, or incendiary, with burster or booster with or without detonating fuze. See Explosive projectile									
	Projectile, illuminating, incendiary or smoke, with expelling charge but without bursting charge. See Fireworks, special									
	Projectile, sand-loaded, empty or solid			173.55						
	Propane *or* Liquefied petroleum gas. *See* Liquefied petroleum gas									
*	Propellant explosive	Class A explosive	Explosive A	None	173.64	Forbidden	Forbidden	6	5	
	Propellant explosive (*solid, Class B, and small-arms primer*) *See* *Propellant explosive, solid									
	Propellant explosive in water (*Smokeless powder*)	Class B explosive	Explosive B	None	173.93	Forbidden	Forbidden	1,3	5	Magazine stowage authorized
	Propellant explosive in water, unstable, condemned, *or* deteriorated (*smokeless powder*)	Class B explosive	Explosive B	None	173.93	Forbidden	Forbidden	1,3	5	Magazine stowage authorized
*	Propellant explosive, liquid	Class B explosive	Explosive B	None	173.93	Forbidden	10 pounds	1,2	5	Magazine stowage authorized
*	Propellant explosive, solid	Class B explosive	Explosive B	None	173.93	Forbidden	10 pounds	1,3	5	Magazine stowage authorized
	Propionaldehyde	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Propionic acid	Corrosive material	Corrosive	173.244	173.245	1 quart	5 gallons	1,2	1,2	Separated by a complete compartment or hold from organic peroxides
*	Propionic acid solution	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	Separated by a complete compartment or hold from organic peroxides
	Propionic anhydride	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1,2	1	Keep dry
	Propyl acetate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Propyl alcohol. *See* Alcohol, n.o.s.									
	Propylamine	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,3	5	
	Propyl chloride	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,3	5	
	Propylene diamine	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Propylene dichloride	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Propylene imine, inhibited	Flammable liquid	Flammable liquid	None	173.139	Forbidden	5 pints	1,2	1	
	Propylene *or* Liquefied petroleum gas. *See* Liquefied petroleum gas									
	Propylene oxide	Flammable liquid	Flammable liquid	173.118	173.119	Forbidden	1 gallon	1,3	4	

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
°/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Propyl formate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Propyl mercaptan	Flammable liquid	Flammable liquid	None	173.141	Forbidden	10 gallons	1,2	1	
	Propyl trichlorosilane	Corrosive material	Corrosive	None	173.280	Forbidden	10 gallons	1	1	Keep dry
	Prussic acid. *See* Hydrocyanic acid (*prussic*), liquid *or* unstabilized									
	Pyridine	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Pyrophoric liquid, n.o.s.	Flammable liquid	Flammable liquid	None	173.134	Forbidden	Forbidden	1	5	Shade from radiant heat. Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Pyro sulfuryl chloride	Corrosive material	Corrosive	173.244	173.247	1 quart	1 quart	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Pyroxylin plastic scrap	Flammable solid	Flammable solid	None	173.195	Forbidden	Forbidden	1	5	Shade from radiant heat
	Pyroxylin plastics, rods, sheets, rolls, or tubes	Flammable solid	Flammable solid	173.197		50 pounds	350 pounds	1,3	1	
•	Pyroxylin solution	Combustible liquid	None	173.118a				1,2	1,2	
•	Pyroxylin solution	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
•	Pyroxylin solvent, n.o.s.	Combustible liquid	None	173.118a				1,2	1,2	
•	Pyroxylin solvent, n.o.s.	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Pyrrolidine	Flammable liquid	Flammable liquid	173.118	173.119	Forbidden	10 gallons	1,2	1	
	Quicklime. *See* Calcium oxide									
	Radioactive device, n.o.s.	Radioactive material	None	173.391				1,2	1,2	
•	Radioactive material, finite, n.o.s.	Radioactive material	Radioactive	173.393	173.396			1,2	1,2	
•	Radioactive material, low specific activity *or* LSA, n.o.s.	Radioactive material	Radioactive	173.392	173.393			1,2	1,2	
•	Radioactive material, n.o.s.	Radioactive material	Radioactive	173.393	173.395			1,2	1,2	
•	Radioactive material, small quantity, n.o.s.	Radioactive	None	173.391				1,2	1,2	
•	Radioactive material, special form, n.o.s.	Radioactive material	Radioactive	173.393	173.394			1,2	1,2	
	Rags, oily	Flammable solid	Flammable solid	None	173.199	Forbidden	Forbidden	1,2	1,2	Keep dry. Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Rags, wet	Flammable solid	Flammable solid	None	173.200	Forbidden	Forbidden	1	1	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Railway Fusee. *See* Fusee									
	Railway torpedo. *See* Torpedo, railway									
	Range oil. *See* Fuel oil									
•	*Reducing compound, paint, varnish, lacquer, etc. See* °Compound, lacquer, paint, *or* varnish, etc., removing, reducing, *or* thinning, liquid									
	Refrigerant gas			173.314	173.315					
•	Refrigerating machine	Nonflammable gas	Nonflammable gas	173.306				1,3	1,3	
•	Refrigerating machine	Flammable gas	Flammable gas	173.306				1,3	1,3	
•	Refrigerating machine	Flammable liquid	Flammable liquid	173.130	173.306			1,2	1	
•	*Removing compound, paint, varnish, lacquer, etc., See* °Compound, lacquer, paint, *or* varnish, etc., removing reducing, *or* thinning, liquid									
■	Resin solution (*resin compound, liquid*)	Combustible liquid	None	173.118a				1,2	1,2	
	Resin solution (*resin compound, liquid*)	Flammable liquid	Flammable liquid	173.118	173.119			1,2	1	
	Rifle grenade. *See* Grenade, hand or rifle, explosive									
	Rifle powder. *See* °Propellant explosive, or Black powder									
	Road asphalt *or* tar (*when heated to or above its flash point*). *See* Asphalt									
	Road asphalt *or* tar, liquid. *See* Asphalt, cut back									
•	Road oil	Combustible liquid	None	173.118a				1,2	1,2	

38 §172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Rocket ammunition with empty projectile	Class B explosive	Explosive B	None	173.90	Forbidden	Forbidden	1,3	5	
	Rocket ammunition with explosive projectile	Class A explosive	Explosive A	None	173.57	Forbidden	Forbidden	6	5	
	Rocket ammunition with gas projectile	Class A explosive	Explosive A	None	173.57	Forbidden	Forbidden	6	5	
	Rocket ammunition with illuminating projectile	Class A explosive	Explosive A	None	173.57	Forbidden	Forbidden	6	5	
	Rocket ammunition with incendiary projectile	Class A explosive	Explosive A	None	173.57	Forbidden	Forbidden	6	5	
	Rocket ammunition with inert loaded projectile	Class B explosive	Explosive B	None	173.90	Forbidden	Forbidden	1,3	5	
	Rocket ammunition with smoke projectile	Class A explosive	Explosive A	None	173.57	Forbidden	Forbidden	6	5	
	Rocket ammunition with solid projectile	Class B explosive	Explosive B	None	173.90	Forbidden	Forbidden	1,3	5	
	Rocket body, with electric primer or electric squib			173.55						
	Rocket engine, liquid	Class B explosive	Explosive B	None	173.95	Forbidden	Forbidden	1,2	5	Magazine stowage authorized
	Rocket fireworks. See Fireworks, common									
	Rocket head. *See* Explosive projectile									
*	Rocket motor	Class A explosive	Explosive A	None	173.79	Forbidden	Forbidden	6	5	
*	Rocket motor	Class B explosive	Explosive B	None	173.92	Forbidden	550 pounds	1,3	5	
	Roman candle. See Fireworks, common									
W	Rosin (*colophony*) or Resin	ORM-C	None	173.505	173.1060			1,2	1,2	
*	Rough ammoniate tankage (*less than 7% moisture content*)	Flammable solid	Flammable solid	None	173.210	Forbidden	Forbidden	1	5	
*	Rough ammoniate tankage 7% or more moisture content	Flammable solid	Flammable solid	None	173.210	Forbidden	Forbidden	1,2	1,2	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides. Temperature of tankage must not exceed 100 deg F.
W	Rubber curing compound (*solid*)	ORM-C	None	173.505	173.1065			1,2	1,2	
	Rubber scrap or rubber buffings	Flammable solid	Flammable solid	173.153	173.201	10 pounds	10 pounds	1,2	1,2	
*	Rubber shoddy, regenerated rubber, *or* reclaimed	Flammable solid	Flammable solid	173.153	173.201	10 pounds	10 pounds	1,2	1,2	
	Rubidium metal	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solid labeled Dangerous when wet
	Rubidium metal, in cartridges	Flammable solid	Flammable solid and Dangerous when wet	173.206		1 pound	25 pounds	1,2	4	Segregation same as for flammable solid labeled Dangerous when wet
	Rum, denatured	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
*	Rust preventive coating	Combustible liquid	None	173.118a				1,2	1,2	
	Safety fuse. *See* Fuse, safety									
	Safety squib	Class C explosive	Explosive C	None	173.106	50 pounds	150 pounds	1,3	1,3	
	Salute. See Fireworks common *or* special									
	Sample of explosive			173.86		Forbidden	Forbidden			
	Sand acid. *See* Hydrofluorosilicic acid									
W	Sawdust (*when dry, clean, and free from oil*)	ORM-C	None	173.505	173.1070			1,2	1,2	Keep dry
	Selenic acid, liquid	Corrosive material	Corrosive	None	173.245	Forbidden	5 pints	1,2	1,2	
	Self-lighting cigarette	Flammable solid	Flammable solid	173.21		Forbidden	Forbidden	1,2	1,2	Keep dry
	Self-propelled vehicle			173.120	173.257 173.386					
	Shaped charge, commercial. *See* High explosive			173.65						
	Shellac. See *Paint, enamel, lacquer, stain, shellac, varnish, etc.									
	Shell, fireworks. *See* Fireworks, common *or* special									
	Ship, distress signal. See Fireworks, special									
	Signal flare	Class C explosive	Explosive C	None	173.108	50 pounds	200 pounds	1,2	1,2	
	Silicofluoric acid. *See* Hydrofluorosilicic acid									

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Silicon chloride *or* silicon tetrachloride	Corrosive material	Corrosive	173.244	173.247	1 quart	1 gallon	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Silicon chrome, exothermic. See Exothermic silicon chrome									
	Silicon tetrafluoride	Nonflammable gas	Nonflammable gas	173.306	173.302	Forbidden	300 pounds	1	4	Stow away from foodstuffs
	Silver cyanide	Poison B	Poison	173.370		25 pounds		1,2	1,2	Stow away from acids
	Silver nitrate	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	Stow away from foodstuffs
	Sisal. See Fibers									
*	*Sludge acid. See* Acid, sludge									
	Small arms ammunition	Class C explosive	None	None	173.101	50 pounds	150 pounds	1,3	1,3	
	Small arms ammunition, irritating (*tear gas*) cartridge	Class C explosive	Irritant	None	173.101	Forbidden	150 pounds	1,3	1,3	
	Small arms primer	Class C explosive	Explosive C	None	173.107	50 pounds	150 pounds	1,3	1,3	
	Smoke candle	Class C explosive		None	173.108	50 pounds	300 pounds	1,3	1,3	
	Smoke generator. See Chemical ammunition, Poison A or B Material									
	Smoke grenade	Class C explosive	Explosive C	None	173.108	50 pounds	150 pounds	1,3	1,3	
	Smokeless powder for cannon or small arms. See Propellant explosive, Class A or B									
	Smokeless powder for small arms (*100 pounds or less*)	Flammable solid	Flammable solid	173.88	173.197a	Forbidden	Forbidden	1,3	1,3	Segregation same as for explosives
	Smoke pot	Class C explosive	Explosive C	None	173.108	50 pounds	200 pounds	1,3	1,3	
	Smoke projectile with bursting charge. See Explosive projectile									
	Smoke projectile with expelling charge but without bursting charge. See Fireworks, special									
	Smoke signal	Class C explosive	Explosive C	None	173.108	50 pounds	200 pounds	1,3	1,3	
	Soda amatol. See High explosive									
	Soda lime, solid	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	Keep dry
A	Sodium aluminate, solid	ORM-B	None	173.505	173.510 173.800	25 pounds	100 pounds			
*	Sodium aluminate solution	Corrosive material	Corrosive	173.244	173.249	1 quart	5 gallons	1,2	1,2	
	Sodium aluminum hydride	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet
	Sodium amide	Flammable solid	Flammable solid and Dangerous When Wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solid labeled Dangerous When Wet
	Sodium arsenate	Poison B	Poison	173.364	173.365 173.368	50 pounds	200 pounds	1,2	1,2	
*	Sodium arsenite (*solution*) liquid	Poison B	Poison	173.345	173.346	1 quart	55 gallons	1,2	1,2	
	Sodium azide	Poison B	Poison	173.364	173.375	50 pounds	100 pounds	1,2	1,2	Stow away from heavy metals, especially lead and its compounds. Stow separate from acids
	Sodium bisulfate, solid *or* solution. *See appropriate* Sodium hydrogen sulfate entry									
	Sodium bisulfite, solid. *See* Sodium hydrogen sulfite, solid									
	Sodium bromate	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	Stow separate from ammonium compounds. Stow away from powdered metals
	Sodium chlorate (*soda chlorate*)	Oxidizer	Oxidizer	173.153	173.163	25 pounds	100 pounds	1,2	1,2	Stow separate from ammonium compounds. Stow away from powdered metals
	Sodium chlorite	Oxidizer	Oxidizer	None	173.160	Forbidden	100 pounds	1,2	1,2	Stow separate from ammonium compounds. Stow away from powdered metals
*	Sodium chlorite solution (*not exceeding 42% sodium chlorite*)	Corrosive material	Corrosive	173.244	173.263	1 quart	4 gallons	1,2	1	Glass carboys in hampers not permitted under deck
	Sodium cyanide, solid	Poison B	Poison	173.370		25 pounds c 200 pounds		1,2	1,2	Stow away from acids
*	Sodium cyanide solution	Poison B	Poison	173.345	173.352	1 quart	55 gallons	1,2	1,2	Stow away from acids

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(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Sodium dichloro isocyanaurate. *See* Sodium dichloro-s-triazinetrione									
	Sodium dichloro-s-triazine-trione		Oxidizer	173.153	173.217	50 pounds	100 pounds	1,2	1,2	
A	Sodium dichromate	ORM-A	None	173.505	173.510					
A	Sodium fluoride, solid	ORM-B	None	173.505	173.510					
*	Sodium fluoride solution	Corrosive material	Corrosive	173.244	173.245	1 quart	5 gallons	1,2	1,2	Stow away from acids
	Sodium hydrate. *See* Caustic soda, dry, etc.									
	Sodium hydride	Flammable solid	Flammable solid and Dangerous when wet	None	173.198	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet
A	Sodium hydrogen sulfate, solid	ORM-B	None	173.505	173.510 173.800	25 pounds	100 pounds			
*	Sodium hydrogen sulfate, solution	Corrosive material	Corrosive	173.244	173.245	1 quart	1 gallon	1,2	1,2	
A	Sodium hydrogen sulfite, solid	ORM-B	None	173.505	173.510	25 pounds	100 pounds			
	Sodium hydrosulfite (*sodium dithionite*)	Flammable solid	Flammable solid	173.153	173.204	25 pounds	100 pounds	1,2	1,2	Keep dry. Below deck stowage in metal drums only. Separate from flammable gases, liquids, oxidizing materials, or organic peroxides
	Sodium hydroxide, dry solid, flake, bead, *or* granular	Corrosive material	Corrosive	173.244	173.245b	25 pounds	200 pounds	1,2	1,2	Keep dry
*	Sodium hydroxide, liquid *or* solution	Corrosive material	Corrosive	173.244	173.249	1 quart	5 gallons	1,2	1,2	
A	Sodium metabisulfite	ORM-B	None	173.505	173.510					
	Sodium, metal	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet
	Sodium, metal dispersion in organic solvent	Flammable solid	Flammable solid and Dangerous when wet	None	173.230	Forbidden	10 pounds	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet
	Sodium, metal liquid alloy	Flammable solid	Flammable solid and Dangerous when wet	None	173.202	Forbidden	1 pound	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet
*	Sodium methylate, alcohol mixture	Combustible liquid	None	173.118a				1,2	1,2	
*	Sodium methylate, alcohol mixture	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
*	Sodium methylate, alcohol mixture	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1,2	1,2	
	Sodium methylate, dry	Flammable solid	Flammable solid	173.153	173.154	25 pounds	100 pounds	1,2	1	Segregation same as for flammable solids labeled Dangerous When Wet
	Sodium monoxide, solid	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	Keep dry
	Sodium nitrate	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
	Sodium nitrate bags. See Bags, sodium nitrate, empty and unwashed									
	Sodium nitrite	Oxidizer	Oxidizer	173.153	173.154 173.234	25 pounds	100 pounds	1,2	1,2	Stow separate from ammonium compounds and cyanides. Stow away from foodstuffs. Bagged material not permitted on passenger vessels
	Sodium nitrite mixed (*fused*) with potassium nitrate	Oxidizer	Oxidizer	173.153	173.183	25 pounds	100 pounds	1,2	1,2	Stow separate from ammonium compounds and cyanides. Stow away from foodstuffs
	Sodium nitrite mixture (*sodium nitrate, sodium nitrite, and potassium nitrate*)	Oxidizer	Oxidizer	173.153	173.234	25 pounds	100 pounds	1,2	1,2	Stow separate from ammonium compounds and cyanides. Stow away from foodstuffs
A	Sodium pentachlorophenate	ORM-A	None	173.505	173.510					
	Sodium perchlorate	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,3	1,3	Stow away from powdered metals
	Sodium permanganate	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	Separate from ammonium compounds and hydrogen peroxide
	Sodium peroxide	Oxidizer	Oxidizer	None	173.187	Forbidden	100 pounds	1,2	1	Keep dry. Stow away from powdered metals, permanganates, combustible packing of other cargo, and combustible foodstuffs
	Sodium phenolate, solid	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	
	Sodium phosphide	Flammable solid	Flammable solid and Dangerous when wet	None	173.154	Forbidden	25 pounds	1	5	
	Sodium picramate, wet (*with at least 20% water*)	Flammable solid	Flammable solid	None	173.205	Forbidden	25 pounds	1,2	1	Stow away from heavy metals, especially lead, and its compounds

§172.101 Hazardous Materials Table (cont'd)

(1) */W/A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package: (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments: (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
	Sodium potassium alloy	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	25 pounds	1,2	5	Under deck stowage must be readily accessible. Segregation same as for flammable solids labeled Dangerous When Wet
	Sodium sulfate, acid. *See appropriate* Sodium hydrogen sulfate entry									
•	Sodium sulfide, anhydrous	Flammable solid	Flammable solid	173.153	173.207	25 pounds	300 pounds	1,2	1,2	Stow separate from liquid acids. Separate from flammable gases or liquids, oxidizing materials or organic peroxides
•	Solvent, n.o.s.	Combustible liquid	None	173.118a				1,2	1,2	
•	Solvent, n.o.s.	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Sparklers. See Fireworks, common									
	Spent iron mass. See Iron mass, spent									
	Spent iron sponge. See Iron sponge, spent									
	Spent mixed acid. See Nitrating acid									
	Spent oxide. See Oxide, spent									
	Spent sulfuric acid. See Sulfuric acid, spent									
	Spirits of nitroglycerin, (*1 to 10%*)	Flammable liquid	Flammable liquid	None	173.133	Forbidden	6 quarts	1,2	5	Segregation same as for explosives
	Spirits of nitroglycerin, not exceeding 1% nitroglycerin by weight	Flammable liquid	Flammable liquid	173.118	173.133	1 quart	6 quarts	1,2	1	
	Spirits of salt. *See* Hydrochloric acid									
	Sporting powder. See Black powder *or* Propellant explosive, solid, Class B explosive									
	Spray starting fluid. See Engine starting fluid									
	Spreader cartridge. See Fireworks, special									
	Squib, electric or safety. See Electric squib *or* Safety squib									
•	*Stain. See* *Paint, enamel, lacquer, stain, shellac, varnish, etc.									
	Stannic phosphide	Flammable solid	Flammable solid and Dangerous when wet	None	173.154	Forbidden	25 pounds	1	5	Segregation same as for flammable solid labeled Dangerous When Wet
A	Stannous chloride, solid	ORM-B	None	173.505	173.510					
•	Starter cartridge	Class B explosive	Explosive B	None	173.92	Forbidden	200 pounds	1,3	5	
•	Starter cartridge	Class C explosive	Explosive C	None	173.102	50 pounds	150 pounds	1,3	1,3	
	Storage battery wet. See Battery, electric storage, wet									
	Straw. *See* Hay									
	Strontium arsenite, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Strontium chlorate	Oxidizer	Oxidizer	173.153	173.163	25 pounds	100 pounds	1,2	1,2	Stow separate from ammonium compounds. Stow away from powdered metals
•	Strontium chlorate, wet	Oxidizer	Oxidizer	173.153	173.163	25 pounds	200 pounds	1,2	1,2	Stow separate from ammonium compounds. Stow away from powdered metals
	Strontium nitrate	Oxidizer	Oxidizer	173.153	173.182	25 pounds	100 pounds	1,2	1,2	
	Strontium peroxide	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	Keep dry
•	Strychnine salt, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Strychnine, solid	Poison B	Poison	None	173.377	Forbidden	200 pounds	1,2	1,2	
	Styphnate of lead. See Initiating explosive									
	Styrene monomer, inhibited	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1,2	
	Succinic acid peroxide	Organic peroxide	Organic peroxide	173.153	173.157 173.158	Forbidden	25 pounds	1	1	
	Sulfur chloride (*mono and di*)	Corrosive material	Corrosive	None	173.247	Forbidden	1 gallon	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Sulfur dioxide	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314 173.315	Forbidden	300 pounds	1,2	4	Stow away from living quarters
	Sulfur flower. *See* Sulfur									
	Sulfur hexafluoride	Nonflammable gas	Nonflammable gas	173.306	173.304	150 pounds	300 pounds	1,2	1,2	
	Sulfuric acid (*For fuming sulfuric acid, see* Oleum)	Corrosive material	Corrosive	173.244	173.272	1 quart	1 gallon	1	1	Keep dry. Under deck stowage is permitted on cargo vessels only in metal drums

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Sulfuric acid, spent	Corrosive material	Corrosive	None	173.248	Forbidden	1 quart	1	1	Under deck stowage is permitted on cargo vessels only in metal drums
	Sulfuric anhydride. *See* Sulfur trioxide, stabilized									
*	Sulfurous acid	Corrosive material	Corrosive	173.244	173.245	2 gallons	2 gallons	1,2	1	Glass carboys in hampers not permitted under deck
W	Sulfur, solid	ORM-C	None	173.505	173.1080			1,2	1,2	Protect from sparks and open flame. Stow separate from oxidizing materials. Segregation same as for flammable solids
	Sulfur trioxide, stabilized	Corrosive material	Corrosive and Poison	173.244	173.273	Forbidden	1 gallon	1,2	1,2	Keep dry. Glass bottles not permitted under deck
	Sulfuryl chloride	Corrosive material	Corrosive	173.244	173.247	1 quart	1 quart	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Sulfuryl fluoride	Nonflammable gas	Nonflammable gas	173.306	173.304 173.314	150 pounds	300 pounds	1,3	1	
	Sulphur. *See* Sulfur									
	Supplementary charge (explosive)	Class A explosive	Explosive A	None	173.69	Forbidden	Forbidden	6	5	
	Tankage. See Garbage tankage									
*	Tankage fertilizer	Flammable solid	Flammable solid	None	173.209	Forbidden	Forbidden	1	5	Keep dry. Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
*	Tankage, rough ammoniate	Flammable solid	Flammable solid	None	173.210	Forbidden	Forbidden	1	5	Keep dry. Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Tank car, containing residual phosphorus and filled with water or inert gas			173.232						
W	Tank car, empty (*previously used for a hazardous material*)			173.29						
	Tank car empty (*previously used for a Poison A material*)			172.506	173.29					
W	Tank, portable, empty (*previously used for a hazardous material*)			172.505	173.29					
	Tank truck, empty			172.505	173.29					
*	Tar, liquid	Combustible liquid	None	173.118a				1,2	1,2	
*	Tar, liquid	Flammable liquid	Flammable liquid	173.118	173.131	1 quart	10 gallons	1,2	1	
	Tear gas ammunition. See Chemical ammunition (containing an irritant material)									
	Tear gas candle	Irritating material	Irritant	None	173.385	Forbidden	75 pounds	1	5	Stow away from living quarters
	Tear gas cartridge. See Small arms ammunition irritating (*tear gas*) cartridge									
	Tear gas grenade. See Grenade, tear gas									
	Tertiary alcohol. See Alcohol, n.o.s.									
	Tertiary butyl isopropyl benzene hydroperoxide	Organic peroxide	Organic peroxide	173.153	173.224	1 quart	1 quart	1,2	1	
AW	Tetrachloroethane	ORM-A	None	173.505	173.620	1 quart	10 gallons	1,2	1,2	
A	Tetrachloroethylene	ORM-A	None	173.505	173.510 173.605	10 gallons	55 gallons			
	Tetraethyl dithio pyrophosphate and compressed gas mixture	Poison A	Poison gas	None	173.334	Forbidden	Forbidden	1	5	Shade from radiant heat. Stow away from living quarters. Segregation same as for nonflammable gases
	Tetraethyl dithio pyrophosphate, liquid	Poison B	Poison	None	173.358	Forbidden	1 quart	1	5	
	Tetraethyl dithio pyrophosphate mixture, dry	Poison B	Poison	None	173.377	Forbidden	Forbidden 1		5	
	Tetraethyl dithio pyrophosphate mixture, liquid	Poison B	Poison	None	173.359	Forbidden	1 quart	1	5	
	Tetraethyl lead, liquid (*including flash point for export shipment by water*)	Poison B	Poison	None	173.354	Forbidden	55 gallons	1	5	If flash point is 141 deg F. or less, segregation must be the same as for flammable liquids
	Tetraethyl pyrophosphate and compressed gas mixture	Poison A	Poison gas	None	173.334	Forbidden	Forbidden	1	5	Shade from radiant heat. Stow away from living quarters. Segregation same as for nonflammable gases
	Tetraethyl pyrophosphate, liquid	Poison B	Poison	None	173.358	Forbidden	1 quart	1,2	5	
	Tetraethyl pyrophosphate mixture, dry	Poison B	Poison	None	173.377	Forbidden	200 pounds	1,2	5	
	Tetraethyl pyrophosphate mixture, liquid	Poison B	Poison	None	173.359	Forbidden	1 quart	1,2	5	
	Tetrafluoroethylene, inhibited	Flammable gas	Flammable gas	173.306	173.304	Forbidden	300 pounds	1,2	1,2	Stow away from living quarters
	1,2,3,6-Tetrahydrobenzaldehyde	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1,2	1,2	
	Tetrahydrofuran	Flammable liquid	Flammable liquid	None	173.119	Forbidden	10 gallons	1,3	5	

§172.101 Hazardous Materials Table (cont'd)

(1) */W/A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
	Tetramethyl ammonium hydroxide, liquid	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
A	Tetramethyl methylene diamine	ORM-A	None	173.505	173.510					
	Tetranitromethane	Oxidizer	Oxidizer	None	173.203	Forbidden	Forbidden	1	5	Shade from radiant heat. Stow away from foodstuffs
	Tetrazene (guanyl nitrosamino guanyltetrazene). See Initiating explosive									
	Tetryl. See High explosive									
*	Textile treating compound mixture, liquid	Corrosive material	Corrosive	173.244	173.245 173.249a	1 quart	10 gallons	1,2	1,2	
	Textile waste. *See* Cotton waste									
	Textile waste, wet	Flammable solid	Flammable solid	None	173.211	Forbidden	Forbidden	1,2	1,2	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
*	Thallium salt, solid, n.o.s.	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Thallium sulfate, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Thinner for rust preventive coating. *See* *Rust preventive coating									
	Thinning compound, paint, varnish, lacquer, etc. See *Paint, enamel, lacquer, stain, shellac, varnish, etc.									
	Thiocarbonyl-chloride. See Thiophosgene									
	Thioglycolic acid	Corrosive material	Corrosive	173.244	173.245 1 quart	1 gallon		1,2	1,2	Glass carboys in hampers not permitted under deck
	Thionyl chloride	Corrosive material	Corrosive and Poison	None	173.247	Forbidden	1 gallon	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Thiophosgene	Poison B	Poison	None	173.356	Forbidden	1 gallon	1	5	Shade from radiant heat
	Thiophosphoryl chloride	Corrosive material	Corrosive	None	173.271	Forbidden	1 quart	1	1	Keep dry. Glass carboys not permitted on passenger vessels
A	Thiram	ORM-A	None	173.505	173.510					
	Thorium metal, pyrophoric	Radioactive material	Radioactive and Flammable solid	173.226	173.226			1,2	1,2	
	Thorium nitrate	Radioactive material	Radioactive and Oxidizer	173.392	173.393			1,2	1,2	Separate longitudinally by a complete hold or compartment from explosives
	Time fuze. See Fuze, time, non-detonating									
	Tin chloride, fuming. *See* Tin tetrachloride, anhydrous									
*	Tinning flux. *See* *Zinc chloride solution									
	Tin perchloride. *See* Tin tetrachloride, anhydrous									
	Tin tetrachloride, anhydrous	Corrosive material	Corrosive	173.244	173.247	1 quart	1 quart	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Titanium metal powder, dry or wet *with less than 20% water*	Flammable solid	Flammable solid	None	173.208	Forbidden	75 pounds	1,2	5	
	Titanium metal powder, wet with 20% or more water	Flammable solid	Flammable solid	None	173.208	Forbidden	150 pounds	1,2	5	
*	Titanium sulfate solution *containing not more than 45% sulfuric acid*	Corrosive material	Corrosive	173.244	173.297	1 quart	1 gallon	1	4	Shade from radiant heat. Keep dry
	Titanium tetrachloride	Corrosive material	Corrosive	173.244	173.247	1 quart	10 gallons	1	1	Keep dry. Glass carboys not permitted on passenger vessels
	Toluene (*toluol*)	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
A	Toluenediamine	ORM-A	None	173.505	173.510					
	Toluene diisocyanate	Poison B	Poison	173.345	173.346	Forbidden	55 gallons	1	4	Shade from radiant heat
	Toluene sulfonic acid, liquid	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Torch. See Fireworks, common									
	Torpedo, railway	Class B explosive	Explosive B	None	173.91	Forbidden	200 pounds	1,2	1,2	Passenger vessels in metal lockers only
	Toxaphene. *See* Camphene									
	Toy caps	Class C explosive	Explosive C	None	173.100 173.109	50 pounds	150 pounds	1,3	1,3	
	Toy propellant device	Class C explosive	Explosive C	None	173.111	50 pounds	150 pounds	1,3	1,3	
	Toy smoke device	Class C explosive	Explosive C	None	173.111	50 pounds	150 pounds	1,3	1,3	
	Toy torpedo. See Fireworks, special									
	Tracer	Class C explosive	Explosive C	None	173.105	50 pounds	150 pounds	1,3	1,3	
	Tracer fuze	Class C explosive	Explosive C	None	173.105	50 pounds	150 pounds	1,3	1,3	
	Tractor			173.120						

§172.101 Hazardous Materials Table (cont'd)

(1)	(2)	(3)	(4)	(5)	(6)	(7) Maximum quantity in one package		(8) Water shipments		
*/W/A	Hazardous materials descriptions and proper shipping names	Hazard class	Label(s) required (if not exempt)	Exceptions	Packaging requirements	(a) Passenger carrying aircraft	(b) Cargo only aircraft	(a) Cargo vessel	(b) Passenger vessel	(c) Other requirements
	Trailer or truck body with refrigerating or heating equipment			173.120	173.306					
	Treated paper (*manufactured article properly dried to prevent spontaneous heating*). *See* Oiled material									
	Treated textile (*manufactured article properly dried to prevent spontaneous heating*). *See* Oiled material									
	Trichloroacetic acid, solid	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1	
*	Trichloroacetic acid solution	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1,2	1,2	Glass carboys in hampers not permitted under deck
A	Trichloroethylene	ORM-A	None	173.505	173.510 173.605	10 gallons	55 gallons			
	Trichlorosilane	Flammable liquid	Flammable liquid	None	173.136	Forbidden	10 gallons	1	5	Segregation same as for flammable solids labeled Dangerous When Wet
	Trichloro-s-triazinetrione, dry (*containing over 39% available chlorine*)	Oxidizer	Oxidizer	173.153	173.217	50 pounds	100 pounds	1,3	1,3	Keep dry
	0LB0(mono-(Trichloro) tetra-(monopotassium dichloro)0RB0-penta-s-triazinetrione, dry (*containing over 39% available chlorine*)	Oxidizer	Oxidizer	173.153	173.217	50 pounds	100 pounds	1,3	1,3	Keep dry
	Trick matches	Class C explosive	Explosive C	None	173.111	Forbidden	Forbidden	1,3	1,3	
	Trick noise maker, explosive	Class C explosive	Explosive C	None	173.111	50 pounds	150 pounds	1,3	1,3	
	Triethylamine	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Trifluorochlorethylene	Flammable gas	Flammable gas	173.306	173.304 173.314	Forbidden	10 gallons	1,2	1	
	Trimethyl acetyl chloride	Corrosive material	Corrosive	173.244	173.247	1 quart	1 quart	1,2	1,2	
	Trimethylamine, anhydrous	Flammable gas	Flammable gas	173.306	173.304 173.314 173.315	Forbidden	300 pounds	1	4	
*	Trimethylamine, aqueous solution	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	Stow away from mercury and mercury compounds
	Trimethylchlorosilane	Flammable liquid	Flammable liquid	None	173.135	Forbidden	10 gallons	1,2	1	
	Trinitrobenzene, dry. *See* High explosive									
*	Trinitrobenzene, wet *containing at least 10% water*	Flammable solid	Flammable solid	173.212		1 pound	1 pound	1	4	Stow away from heavy metals and their compounds
	Trinitrobenzoic acid, dry. *See* High explosive									
*	Trinitrobenzoic acid, wet, *containing at least 10% water*	Flammable solid	Flammable solid	None	173.192 173.193	1 pound	25 pounds	1	5	Stow away from heavy metals and their compounds
	Trinitrobenzoic acid, wet, containing at least 10% water, over 25 pounds in one outside packaging. *See* High explosive									
	Trinitroresorcinol. *See* High explosive									
	Trinitrotoluene, dry. *See* High explosive									
	Trinitrotoluene, wet *containing at least 10% water*	Flammable solid	Flammable solid	173.212		1 pound	1 pound	1	4	Stow away from heavy metals and their compounds
	Tris-(1-aziridinyl) phosphine oxide	Corrosive material	Corrosive	173.244	173.299a	1 quart	1 gallon	1	1	Keep dry. Glass carboys not permitted on passenger vessels
*	Turpentine	Combustible liquid	None	173.118a				1,2	1,2	
*	Turpentine	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1,2	
*	Turpentine substitute	Combustible liquid	None	173.118a				1,2	1,2	
*	Turpentine substitute	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
W	Twisted jute packing (*rope*) (*treated or untreated*). *See* Oakum									
	Uranium hexafluoride, fissile (containing more than 0.7% U-235)	Radioactive material	Radioactive and corrosive	173.393	173.396			1,2	1,2	
	Uranium hexafluoride, low specific activity (*containing 0.7% or less U-235*)	Radioactive material	Radioactive and corrosive	173.392	173.393			1,2	1,2	
	Uranium metal, pyrophoric	Radioactive material	Radioactive and Flammable solid	173.392	173.393 173.396			1,2	1,2	
	Uranyl nitrate hexahydrate solution	Radioactive material	Radioactive and corrosive	173.392	173.393 173.395 173.396			1,2	1,2	
	Uranyl nitrate, solid	Radioactive material	Radioactive and oxidizer	173.392	173.393 173.396			1,2	1,2	Separate longitudinally by an intervening hold or compartment from explosives
	Urea nitrate, dry. *See* High explosive									

§172.101 Hazardous Materials Table (cont'd)

(1) */W/A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
*	Urea nitrate, wet *with 10% or more water*	Flammable solid	Flammable solid	None	173.192 173.193	1 pound	25 pounds	1,2	1,2	
	Urea nitrate, wet with 10% or more water, over 25 pounds in one outside packaging. See High explosive									
	Urea peroxide	Organic peroxide	Organic peroxide	173.153	173.227	2 pounds	25 pounds	1	X	Keep dry. Shade from radiant heat
	Valeric acid	Corrosive material	Corrosive	173.244	173.245	1 quart	10 gallons	1,2	1,2	
	Valeryl chloride	Corrosive material	Corrosive	173.244	173.245	1 quart	1 gallon	1,2	1,2	
	Vanadium oxytrichloride	Corrosive material	Corrosive	173.244	173.247a	Forbidden	1 quart	1	X	Shade from radiant heat
	Vanadium tetrachloride	Corrosive material	Corrosive	173.244	173.247a	Forbidden	1 quart	1	X	Shade from radiant heat
	Varnish. See *Paint, enamel, lacquer, stain, shellac, varnish, etc.									
	Varnish drier. See *Paint drier, liquid									
	Varnish remover or reducer. See *Compound, lacquer, paint or varnish removing, reducing, or thinning liquid									
	Varnish thinning compound. See *Compound, lacquer, paint, or varnish removing, reducing, or thinning liquid									
	Very signal cartridge	Class C explosive	Explosive C	None	173.108	50 pounds	300 pounds	1,3	1,3	
	Vinyl acetate	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Vinyl chloride	Flammable gas	Flammable gas	173.306	173.304 173.314 173.315	Forbidden	300 pounds	1,2	X	Stow away from living quarters
	Vinyl ethyl ether, inhibited	Flammable liquid	Flammable liquid	None	173.119	Forbidden	1 gallon	1,3	5	
	Vinyl fluoride, inhibited	Flammable gas	Flammable gas	173.306	173.304 173.314 173.315	Forbidden	300 pounds	1	X	
	Vinylidene chloride, inhibited	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,3	X	
	Vinyl isobutyl ether	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	
	Vinyl methyl ether, inhibited	Flammable gas	Flammable gas	173.306	173.304 173.314	Forbidden	30 pounds	1,2	1	Stow away from living quarters
	Vinyl trichlorosilane	Flammable liquid	Flammable liquid	None	173.135	Forbidden	10 gallons	1,2	1	
	Vitriol, oil of. *See* Sulfuric acid									
	War head. See Explosive projectile									
	Waste paper, wet	Flammable solid	Flammable solid	None	173.186	Forbidden	Forbidden	1,2	1,2	Separate from flammable gas or liquids, oxidizing materials, or organic peroxides
	Waste textile, wet	Flammable solid	Flammable solid	None	173.211	Forbidden	Forbidden	1,2	1,2	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Waste wool, wet	Flammable solid	Flammable solid	None	173.213	Forbidden	Forbidden	1,2	1,2	Separate from flammable gases or liquids, oxidizing materials, or organic peroxides
	Water reactive solid, n.o.s.	Flammable solid	Flammable solid and Dangerous when wet	173.153	173.154	Forbidden	25 pounds	1,2	4	Segregation same as for flammable solids labeled Dangerous When Wet
*	Water treatment compounds, liquid	Corrosive material	Corrosive	173.244	173.249	1 quart	10 gallons	1	1	
*	Wax, liquid	Combustible liquid	None	173.118a				1,2	1,2	
	Wet hair. See Hair, wet									
	Wet textile waste. See Waste textile, wet									
	White acid (*ammonium bifluoride and hydrochloric acid mixture*)	Corrosive material	Corrosive	173.244	173.264	1 quart	1 gallon	1	1	
*	*Wood filler. See* *Paint, varnish, lacquer, stain, shellac enamel, etc.									
	Wood shavings (*when dry, clean and free from oil*). *See* Sawdust									
	Wool waste. *See* Cotton waste									
	Wool waste, wet. See Waste wool, wet									
*	Xenon	Nonflammable gas	Nonflammable gas	173.306	173.302	150 pounds	300 pounds	1,2	1,2	
	X-ray film. See Film									
*	Xylene (*Xylol*)	Combustible liquid	None	173.118a				1,2	1,2	
*	Xylene (*xylol*)	Flammable liquid	Flammable liquid	173.118	173.119	1 quart	10 gallons	1,2	1	

§172.101 Hazardous Materials Table (cont'd)

(1) */W/A	(2) Hazardous materials descriptions and proper shipping names	(3) Hazard class	(4) Label(s) required (if not exempt)	(5) Exceptions	(6) Packaging requirements	(7) Maximum quantity in one package (a) Passenger carrying aircraft	(7) (b) Cargo only aircraft	(8) Water shipments (a) Cargo vessel	(8) (b) Passenger vessel	(8) (c) Other requirements
	Xylyl bromide	Irritating material	Irritant	None	173.382	Forbidden	75 pounds	1	5	Stow away from living quarters
A	Yeast, active, *in liquid or pressed form*	ORM-C	None	None	173.1085					
	Zinc ammonium nitrite	Oxidizer	Oxidizer	None	173.228	25 pounds	100 pounds	1,3	3	This material may be forbidden in water transportation by certain countries
	Zinc arsenate	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Zinc arsenite, solid	Poison B	Poison	173.364	173.365	50 pounds	200 pounds	1,2	1,2	
	Zinc chlorate	Oxidizer	Oxidizer	173.153	173.163	25 pounds	100 pounds	1,2	1,2	Stow separate from ammonium compounds and away from powdered metals
*	Zinc chloride solution	Corrosive material	Corrosive	173.244	173.245	1 quart	1 quart	1,2	1,2	
	Zinc cyanide	Poison B	Poison	173.370		25 pounds		1,2	1,2	Stow away from acids
	Zinc ethyl. See Pyrophoric liquids, n.o.s.									
*	Zinc muriate solution. *See* Zinc chloride solution									
	Zinc nitrate. See Nitrates, n.o.s.									
	Zinc permanganate	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	Separate from ammonium compounds and hydrogen peroxide
	Zinc peroxide	Oxidizer	Oxidizer	173.153	173.154	25 pounds	100 pounds	1,2	1,2	Keep dry
	Zinc phosphide	Flammable solid	Flammable solid and Dangerous when wet	None	173.154	25 pounds	Forbidden	1,2	1,2	Stow away from acids and oxidizing materials, living quarters and foodstuffs
	Zirconium hydride	Flammable solid	Flammable solid and Dangerous when wet	None	173.206	Forbidden	150 pounds	1,2	5	Segregation same as for flammable solids labeled Dangerous When Wet
	Zirconium metal, dry, *chemically produced, finer than 20 mesh particle size*	Flammable solid	Flammable solid	None	173.214	Forbidden	75 pounds	1	1	Separate from flammable gases or liquids, oxidizing materials or organic peroxides
	Zirconium metal, dry, *mechanically produced, finer than 270 mesh particle size*	Flammable solid	Flammable solid	None	173.214	Forbidden	75 pounds	1	1	Separate from flammable gases or liquids, oxidizing materials or organic peroxides
*	Zirconium, metal, liquid, suspensions	Flammable liquid	Flammable liquid	None	173.140	Forbidden	5 gallons	1	5	
	Zirconium metal, wet, *chemically produced, finer than 20 mesh particle size*	Flammable solid	Flammable solid	None	173.214	Forbidden	150 pounds	1,2	5	
	Zirconium metal, wet *mechanically produced, finer than 270 mesh particle size*	Flammable solid	Flammable solid	None	173.214	Forbidden	150 pounds	1,2	5	
	Zirconium picramate, wet *with at least 20% of water*	Flammable solid	Flammable solid	None	173.216	Forbidden	25 pounds	1	1	Stow away from heavy metals and their salts
*	Zirconium scrap (*borings, clippings, shavings, sheets, or turnings*)	Flammable solid	Flammable solid	173.153	173.220	Forbidden	Forbidden	1	4	Separate from flammable gases of liquids, oxidizing materials, or organic peroxides
	Zirconium tetrachloride, solid	Corrosive material	Corrosive	173.244	173.245b	25 pounds	100 pounds	1,2	1,2	

Subpart C—Shipping Papers

§ 172.200 General shipping paper requirements.

(a) *Description of hazardous materials required.* Except as otherwise provided in this subpart, each person who offers a hazardous material for transportation shall describe the hazardous material on the shipping paper in the manner required by this subpart.

(b) *Description not required.* This subpart does not apply to any material that is—(1) An ORM–A, B, or C, unless it is offered or intended for transportation by air when it is subject to the regulations pertaining to transportation by air as specified in § 172.101; or

(2) An ORM–A, B, or C, unless it is offered or intended for transportation by water when it is subject to the regulations pertaining to transportation by water as specified in § 172.101; or

(3) An ORM–D unless it is offered or intended for transportation by air.

(4) A hazardous material in limited quantities when offered or intended for transportation by rail unless it is to be transported in a rail car—(i) Used to transport passengers, or

(ii) In TOFC or COFC service.

§ 172.201 General entries.

(a) *Contents.* When a description of hazardous material is required to be included on a shipping paper, that description must conform to the following requirements:

(1) When a hazardous material and a nonhazardous material are described on the same shipping paper, the hazardous material description—(i) Must be entered first, or

(ii) Must be entered in a color that clearly contrasts will all other kinds of information on the shipping paper, or

(iii) Must be identified by the entry of an "X" placed before the proper shipping name in a column captioned "HM" that has a border in a color that clearly contrasts with all other entries displayed on the shipping paper.

(2) The required shipping description on a shipping paper and all copies thereof used for transportation purposes, must be legible and printed (manually or mechanically) in English.

(3) Unless it is specifically authorized or required in this subpart, the required shipping description may not contain any code or abbreviation.

(4) A shipping paper may contain additional information concerning the material provided the information is not inconsistent with the required description. It must be placed after the required description including requirements of § 172.203.

§ 172.202 Description of hazardous material on shipping papers.

(a) Each description of a hazardous material on the shipping paper must include—(1) The proper shipping name prescribed for the material as required by § 172.101.

(2) The class prescribed for the material as required by § 172.101. When the words of the proper shipping name are identical (excluding the entry "n.o.s.") with the words of the class, the inclusion of the class is not required.

(3) (Reserved)

(4) The total quantity (by weight, volume, or as otherwise appropriate) of the hazardous material covered by the description.

(b) The description specified in paragraphs (a) (1) and (a) (2) of this section must be shown in sequence. For example; "Gasoline, Flammable liquid"; or "Flammable solid, n.o.s."

(c) The total quantity of the material covered by one description must appear before or after, or both before and after, the description required and authorized by this subpart.

(1) Abbreviations may be used to specify the type of container and weight or volume. For example: 40 cyl. Nitrogen, Non-flammable Gas—800 pounds; 1 box Cement, liquid n.o.s., Flammable liquid (rubber cement), 25 lbs.

§ 172.203 Additional description requirements.

(a) *Exemptions.* Each shipping paper issued in connection with a shipment made under an exemption must bear the notation "DOT–E" followed by the exemption number assigned and so located that the notation is clearly associated with the entry to which the exemption applies.

(b) *Limited quantities.* The description on the shipping paper for a material defined as "limited quantities" in this subchapter must include the words "Limited Quantities" or "Ltd. Qty." following the proper shipping name and classification.

(c) *Blasting caps.* The description on the shipping paper for a shipment of blasting caps must have an entry stating the number of caps in the shipment, either before or after the proper shipping name and classification.

(d) *Corrosive material corrosive only to steel.* For a corrosive material corrosive only to steel, offered for transportation in a portable tank, cargo tank, or tank car by rail or highway, the entry "NO PLACARD REQUIRED" shall be added to the shipping paper following the description to indicate the placarding exception authorized by § 172.504(a).

(e) *Empty packagings.* The description on the shipping paper for an empty packaging, other than a tank car, containing the residue of a hazardous material may contain the word "EMPTY" or the words "EMPTY—Last Contained" before or after the requirements of §§ 172.202 and 172.203. (Fill in blank with appropriate proper shipping name). (For a tank car containing the residue of a hazardous material, see also § 174.25 of this subchapter).

(f) *Transportation by air.* When a package containing a hazardous material is offered for transportation by air and this subchapter prohibits its transportation by passenger-carrying aircraft, the description required by §§ 172.202 and 172.203 must be followed by the words "Cargo-only aircraft."

(g) *Transportation by rail.* (1) In addition to the requirements in §§ 172.202 and 172.203 the shipping paper for hazardous material including an empty tank car as described in § 172.510(c) when offered for transportation by rail must contain the following:

(i) The notation "Placarded" followed by the name of the placard required for the rail car, and

(ii) The placard endorsement required by § 174.25 of this subchapter.

(iii) The word "EMPTY" for certain rail cars as required by § 174.25 of this subchapter.

(2) The shipping paper for each Specification DOT 112A or 114A (without head shields) containing a flammable compressed gas must contain the notations "DOT 112A" or "DOT 114A," as appropriate, and "Must be handled in accordance with FRA E.O. No. 5."

(h) *Transportation by highway.* In addition to the requirements of §§ 172.202 and 172.203, the description on the shipping paper for hazardous materials in a specification MC 330 or MC 331 cargo tank made of quenched and tempered steel must have, for—

(1) *Anhydrous ammonia.* (i) The words "0.2 per cent water" to indicate the suitability for shipping anhydrous ammonia in the cargo tank as authorized by § 177.817 of this subchapter, or

(ii) The words "NOT FOR Q AND T TANKS" when the anhydrous ammonia does not contain 0.2 per cent or more water by weight.

(2) *Liquefied petroleum gas.* The word "Non-corrosive" or "Non-cor" to indicate the suitability for shipment of the "Non-corrosive" liquefied petroleum gas offered for transportation by cargo tank as authorized by § 173.315 (a) (1) Note 15 of this subchapter.

(i) *Transportation by water.* (1) The shipping paper for a hazardous material offered for transportation by water must have the following additional entries: (i) Identification of the type of packages such as barrels, drums, cylinders, and boxes,

(ii) The number of each type of package including those in a freight container or on a pallet, and

(iii) The gross weight of each type of package or the individual gross weight of each package.

(iv) The name of the shipper in addition to the certification signature.

(2) The shipping paper for a hazardous material offered for transportation by water to any country outside the United States must have in parenthesis the technical name of the material following the proper shipping name when the material is described by a "n.o.s." entry in § 172.101. For example: Corrosive liquid, n.o.s. (caprylyl chloride), Corrosive material.

(j) For a mixture, only the technical name of a hazardous material giving the mixture its hazardous properties must be listed.

(j) *Radioactive material.* (1) Each person offering a radioactive material for transportation shall include on the shipping paper the following information in addition to the description required by § 172.202: (i) The name of each radionuclide in the radioactive material that is listed in § 173.390 of this subchapter. Abbreviations, e.g. "Mo are authorized.

(ii) A description of the physical and chemical form of the material, if the material is not in special form.

(iii) The activity contained in each package of the shipment in terms of curies, millicuries, or microcuries. Abbreviations are authorized.

(iv) The category of label applied to each package in the shipment. For example: "RADIOACTIVE WHITE-I," or the words "No Label Required," if applicable.

(v) The transport index assigned to each package in the shipment bearing RADIOACTIVE YELLOW-II or RADIOACTIVE YELLOW-III labels.

(vi) For a shipment of fissile radioactive materials—(A) The words "Fissile Exempt," if the package is exempt pursuant to § 173.396(a) of this subchapter, or

(B) If not exempt, the fissile class of each package in the shipment, pursuant to § 173.389(a) of this subchapter; and

(C) For a Fissile Class III shipment, the additional notation: "Warning—Fissile Class III Shipment. Do not Load More Than * * * Packages per Vehicle." (Asterisks to be replaced by appropriate number.) "In Loading and Storage Areas, Keep at Least 20 Feet (6 Meters) from Other Packages Bearing Radioactive Labels."

(D) If a Fissile Class III shipment is to be transported by water, the supplementary notation must also include the following statement: "For shipment by water, only one Fissile Class III shipment is permitted in a hold."

(vii) For a package approved by the U.S. Energy Research and Development Administration (ERDA) or U.S. Nuclear Regulatory Commission (USNRC) a notation of the package identification marking as prescribed in the applicable ERDA or USNRC approval. (See § 173.393a of this subchapter.)

(viii) For an export shipment or a shipment in a foreign made package, a notation of the package identification marking as prescribed in the applicable International Atomic Energy Agency (IAEA) Certificate of Competent Authority which has been issued for the package. (See § 173.393b(a)(3) of this subchapter).

§ 172.204 Shipper's certification.

(a) *General.* Except as provided in paragraphs (b) and (c) of this section, and in paragraph (b) of § 172.200, each person who offers a hazardous material for transportation shall certify in writing that the material has been presented for transportation in accordance with this subchapter by printing (manually or mechanically) the following statement on the shipping paper containing the required shipping description:

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

NOTE: Preprinted certificates complying with 49 CFR 173.430(a) in effect on June 30, 1976, may be used through June 30, 1979. After June 30, 1979, use of the certificate required by this section is mandatory.

(b) *Exceptions.* No certification is required for hazardous material offered for transportation by highway that is transported—(1) In a cargo tank supplied by the carrier, or

(2) By the shipper as a private carrier except for a hazardous material that is to be reshipped or transferred from one carrier to another.

(c) *Transportation by air.* (1) *General.* Certification containing the following language may be used in place of the certification required by paragraph (a) of this section:

I hereby certify that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and in proper condition for carriage by air according to applicable national governmental regulations.

(2) *Certificate in duplicate.* Each person who offers a hazardous material for transportation by air shall provide two copies of the certification required in this section. (See § 175.30 of this subchapter.)

(3) *Passenger and cargo aircraft.* Each person who offers for transportation by air a hazardous material authorized for air transportation shall add to the certification required in this section the following statement:

This shipment is within the limitations prescribed for passenger aircraft/cargo-only aircraft (delete nonapplicable).

(4) *Radioactive material.* Each person who offers any radioactive material subject to Part 175 of this subchapter for shipment in a passenger-carrying aircraft shall sign (mechanically or manually) a printed certificate stating that the shipment contains radioactive materials intended for use in, or incident to research, medical diagnosis, or treatment, and meets the requirements of Part 175 of this subchapter for shipment aboard passenger-carrying aircraft.

(d) *Signature.* The certifications required by paragraphs (a) or (c) of this section—(1) Must be legibly signed by a principal, officer, partner, or employee of the shipper or his agent; and

(2) May be legibly signed manually, by typewriter, or by other mechanical means.

Subpart D—Marking

§ 172.300 General marking requirements.

Except as provided in this section, §§ 172.302 and 172.316, and Part 173 of this subchapter, each person who offers a package containing a hazardous material for transportation shall mark the package with the proper shipping name required by § 172.101. However, when it has been determined by the shipper that a package has been previously marked as required for the material it contains, it need not be re-marked.

§ 172.302 Export shipments by water.

(a) Each package of hazardous material offered for export by water and described by a "n.o.s." entry in § 172.101 must have the technical name of the material added in parentheses immediately following the proper shipping name. For example: Corrosive liquid, n.o.s. (Caprylyl chloride).

(b) For a mixture, only the technical name of the hazardous material giving a mixture its hazardous properties must be listed.

§ 172.304 Marking specifications.

(a) The marking required in this subpart—(1) Must be durable, in English and printed on or affixed to the surface of a package or on a label, tag, or sign.

(2) Must be displayed on a background of sharply contrasting color;

(3) Must be unobscured by labels or attachments; and

(4) Must be located away from any other marking (such as advertising) that could substantially reduce its effectiveness.

§ 172.306 Consignee's name and address.

(a) Each package containing a hazardous material offered for transportation must be marked with the name and address of the consignee except when the package is—(1) Transported by highway and will not be transferred from one motor carrier to another;

(2) Part of a carload lot, truckload lot, or freight container load, and the entire contents of the rail car, truck or freight container are tendered from one consignor to one consignee, or

(3) A portable tank, cargo tank or tank car.

§ 172.308 Authorized abbreviations.

(a) Abbreviations may not be used except in the following instances—(1) For marking descriptions on ammunition, such as ammunition for cannon without projectiles, etc., the words "with" or "without" may be abbreviated as "W" or "W/O" for example: "ammunition for cannon W/O projectiles"

(2) The abbreviation "ORM" may be used in place of the words "Other Regulated Materials."

§ 172.310 Radioactive materials.

(a) In addition to any other markings required by this subpart, each package containing radioactive materials must be marked as follows: (1) Each package of radioactive materials in excess of 110 pounds (50 kilograms) must have its gross weight plainly and durably marked on the outside of the package.

(2) Each package of radioactive materials which conforms to the requirements for Type A or Type B packaging (§§ 173.389(j) and (k) and 173.398(b) and (c) of this subchapter) must be plainly and durably marked on the outside of the package in letters at least ½-inch (13 mm.) high, with the words "TYPE A" or "TYPE B" as appropriate. A packaging which is not in compliance with these requirements may not be so marked.

(3) Each package of radioactive material destined for export shipment must

also be marked "USA" in conjunction with the specification marking, or other package certificate identification. (See §§ 173.393a and 173.393b of this subchapter.)

§ 172.312 Liquid hazardous materials.

(a) Except as provided in this section, each package having an inside packaging containing liquid hazardous materials must be—(1) Packed with closures upward, and

(2) Legibly marked "THIS SIDE UP" or "THIS END UP" as appropriate, to indicate the upward position of the inside packaging.

(b) Except as otherwise prescribed in Part 173 of this subchapter, specification containers 6D, 37M, 37P, and 21P are not required to be marked "THIS SIDE UP" or "THIS END UP".

(c) Arrows for purposes other than indicating proper package orientation may not be displayed on a package containing a hazardous material.

(1) An arrow symbol indicating "This Way Up" as specified in ANSI MH6.11968 entitled "Pictorial Marking for Handling of Goods" should be used in addition to the marking required by this section and § 173.25 of this subchapter.

§ 172.316 Outside packagings containing ORM.

(a) Except as provided in § 173.505 of this subchapter, each package containing a material classed as ORM–A, B, C, or D must be plainly and durably marked on at least one side or end with the appropriate ORM designation immediately following or below the proper shipping name of the material. The appropriate ORM designation must be placed within a rectangle that is approximately ¼ inch (6.3 mm.) larger on each side than the designation. The appropriate designation for each ORM must be:

(1) ORM–A for an ORM–A.

(2) ORM–B–KEEP DRY for an ORM–B that is a solid and is corrosive only to aluminum when wet.

(3) ORM–B for an ORM–B other than that described in paragraph (a)(2) of this section.

(4) ORM–C for an ORM–C.

(5) ORM–D–AIR for an ORM–D that is prepared for air shipment and packaged in accordance with the provisions of § 173.6 of this subchapter.

(6) ORM–D for an ORM–D other than that described in paragraph (a)(5) of this section.

(b) When the ORM–D marking can not be affixed on the package surface, it may be on an attached tag.

(c) The marking ORM–A, B, C, or D is the certification by the person offering the package for transportation that the material is properly classed, packaged, marked, and labeled (when appropriate) and in proper condition for transportation according to the applicable regulations of the Department. This form of certification does not preclude the requirement for a certificate on a shipping paper when required by § 172.200.

§ 172.326 Portable tanks.

(a) A portable tank containing a hazardous material must be marked in lettering two inches (50.8 mm.) or more in height with the proper shipping name of the material. This marking must be legibly displayed as specified in this part—(1) On one side and on the head, when appropriate, or

(2) On two opposing sides when the portable tank is of such a shape that marking on the head is not appropriate.

(b) A portable tank marked with the name of a specific hazardous material other than that which the portable tank contains must have the marking removed or changed as appropriate to identify the hazardous material in the portable tank.

(c) The name of the owner, or when appropriate, of the lessee, must be legibly displayed on a portable tank that contains a hazardous material.

§ 172.328 Cargo tanks.

(a) *Required markings: hazardous materials other than gases.* When transporting a hazardous material other than a compressed gas, a cargo tank required by Part 173 of this subchapter to be marked with the proper shipping name of the contents must be marked as specified in this part on each end and each side.

(b) *Required markings: gases.* Each cargo tank transporting flammable or nonflammable compressed gas subject to this subchapter must be legibly marked in lettering two inches (50.8 mm.) or more in height as specified in this Part on each end and each side with—

(1) The Proper shipping name of the gas, or

(2) An appropriate common name for the material such as "Refrigerant Gas."

(c) *QT/NQT marking for MC 330 and MC 331 cargo tanks.* Each specification MC 330 and MC 331 cargo tank must be appropriately marked "QT" or "NQT" to indicate it is constructed of quenched and tempered steel (QT) or other than quenched and tempered steel (NQT). The marking must be 2 inches (50.8 mm.) or more in height and must be placed near the specification identification plate.

(d) When a cargo tank is used for transporting a hazardous material other than that indicated by the marking, the marking must be changed as appropriate to identify the hazardous material the cargo tank contains.

§ 172.330 Tank cars.

(a) When required by Parts 173 and 179 of this subchapter, each tank car used to transport a hazardous material must be marked as specified in this subpart with the—(1) Proper shipping name, or

(2) Authorized common name of the material such as "Refrigerant Gas," or "Chlorine."

(b) The letters in required markings must be 4 inches (101.6mm.) more in height with at least a ⅝-inch (15.9 mm.) stroke. The separation between each letter must be at least ¾-inch (19.0 mm.).

(c) The markings must be—(1) Affixed to both sides of the tank car near the stenciled DOT specification marking; and

(2) Readily visible when viewed from each side of the tank car.

(d) When a tank car is used for transporting a hazardous material other than that indicated by the marking, the marking must be changed as appropriate to identify the hazardous material the tank car contains.

Subpart E—Labeling

§ 172.400 General labeling requirements.

(a) Except as otherwise provided in this subchapter, each person who offers a package containing a hazardous material for transportation shall label the package conspicuously with labels prescribed in this subpart. In the case of a material listed in the table in § 172.101, the package must be labeled as required in the table. In the case of a material, that is not listed in § 172.101, the package must be labeled as classed based on the hazards of the material determined by the shipper in accordance with § 173.2 of this subchapter. When such a material has multiple hazards, labeling must be in accordance with § 172.402.

(b) A label is not required on a—

(1) Package for which labeling is not required under the conditions set forth in Part 173 of this subchapter and in this section;

(2) Cylinder containing a compressed gas classed as flammable or nonflammable that is—(i) Carried by a private or contract motor carrier;

(ii) Not overpacked; and

(iii) Durably and legibly marked in accordance with CGA Pamphlet C–7, Appendix A, title "A Guide for the Preparation of Precautionary Markings for Compressed Gas Containers," dated January 1976.

(3) Military ammunition shipped by, for, or to the U.S. Department of Defense (DOD) when in carload or truckload shipments, if loaded and unloaded by the shipper, or DOD.

(4) Package containing a hazardous material other than ammunition that is—(i) Loaded and unloaded under the supervision of DOD personnel, and

(ii) Escorted by DOD personnel in a separate vehicle.

(5) Compressed gas cylinder permanently mounted in or on a transport vehicle;

(6) Portable tank having a capacity of 1,000 gallons or more which is subject to § 172.504;

(7) Freight container having a volume of 640 cubic feet or more which is subject to § 172.512;

(8) Package containing a material classed as ORM–A, B, C, or D if that package does not contain any other material classed as a hazardous material that requires labeling.

(9) Package containing a combustible liquid; or

(10) Package of low specific activity radioactive material, when being trans-

ported in a transport vehicle assigned for the sole use of the consignor under § 173.392(b) of this subchapter.

(11) Provisions of this paragraph do not apply to the CARGO AIRCRAFT ONLY label or the MAGNETIZED MATERIAL label.

§ 172.401 Prohibited labeling.

(a) Except as provided in paragraphs (c) and (d) of this section, no person may offer for transportation and no carrier may transport any package bearing a label specified in this subpart unless—(1) The package contains a material that is a hazardous material, and

(2) The label represents a hazard of the hazardous material in the package.

(b) No person may offer for transportation and no carrier may transport a package bearing any marking or label which by its color, design, or shape could be confused with or conflict with a label prescribed by this part.

(c) The restrictions in paragraphs (a) and (b) of this section, do not apply to packages labeled in conformance with —(1) Any United Nations recommendation, including the class number (see § 172.407), in the document entitled *"Transport of Dangerous Goods. (1970)"* or

(2) The Intergovernmental Maritime Consultative Organization (IMCO) requirements, including the class number (see § 172.407), in the document entitled "International Maritime Dangerous Goods Code"

(d) A package containing a sample of a hazardous material, other than an explosive, must be labeled in accordance with § 172.402(h).

§ 172.402 Additional labeling requirements.

(a) *Multiple labeling;* (1) Labeling for a material with one or more than one additional hazard. Each package containing a material classed as an Explosive A, Poison A or Radioactive material that meets the definition of more than one hazard class must be labeled as required for each class.

(2) Certain classes having an additional hazard of Poison B. Each package containing a material classed as a Flammable liquid, Flammable solid, or Oxidizer, that also meets the definition of a Poison B must be labeled as required for the class of material and POISON B.

(b) *CARGO AIRCRAFT ONLY label.* Each person who offers for transportation by air a package containing a hazardous material authorized only on cargo aircraft shall affix to the package a CARGO AIRCRAFT ONLY label which is described in § 172.448.

(c) *DANGEROUS WHEN WET label.* Each person who offers for transportation a package containing a hazardous material must affix to the package a DANGEROUS WHEN WET label as described in § 172.423 when required by § 172.101.

(d) *MAGNETIZED MATERIAL label.* Each person who offers for transportation by air a package meeting the definition of a magnetized material in § 173.1020 of this subchapter must affix to the package a MAGNETIZED MATERIAL label as required by § 172.101 and described in § 172.446.

(e) *BUNG label.* Each metal barrel or drum containing a flammable liquid having a vapor pressure between 16 and 40 p.s.i.a. at 100° F. must have affixed a BUNG label as specified in § 173.119(i) of this subchapter in addition to a FLAMMABLE LIQUID label described in § 172.419.

(f) *ETIOLOGIC AGENTS label.* See § 173.388 of this subchapter for ETIOLOGIC AGENTS labeling requirements.

(g) *EMPTY label.* See § 173.29 of this subchapter for EMPTY labeling requirements.

(h) *Packages containing samples.* Except as provided in §§ 173.21 and 173.86 of this subchapter, a material for which a reasonable doubt exists as to its class and labeling requirements, and for which a sample must be transported for laboratory analysis may be labeled according to the shipper's tentative class assignment based upon—

(1) Defining criteria in this subchapter;

(2) The hazard precedence prescribed in § 173.2 of this subchapter; and

(3) The shipper's knowledge of the material.

(i) *Labels for DOT specification 106 and 110 tanks.* DOT specification 106 and 110 tank must have one of each label required for the hazardous material it contains affixed to each end.

§ 172.403 Radioactive material.

(a) Unless excepted from labeling by § 173.391 or § 173.392 of this subchapter, each package of radioactive material must be labeled as provided in this section.

(b) A RADIOACTIVE WHITE–I label must be affixed to each package measuring 0.5 millirem or less per hour at each point on the external surface of the package, provided the package—

(1) Is not a Fissile Class II or III, or

(2) Does not contain a "large quantity" of radio active material, as defined in § 173.389 of this subchapter.

(c) A RADIO ACTIVE YELLOW–II label must be affixed to each—

(1) Package measuring more than 0.5 but less than 50 millirem per hour at each point, and not exceeding one (1.0) millirem per hour at three feet from each point on the external surface of the package.

(2) Fissile Class II package having a transport index of one (1.0) or less.

(d) A RADIOACTIVE YELLOW-III label must be affixed to each package which —

(1) Measures more than 50 millirem per hour at each point or exceeds one (1.0) millirem per hour at three feet from each point on the external surface;

(2) Is a Fissile Class III; or

(3) Contains a "large quantity" of radioactive material as defined in § 173.389 of this subchapter.

(e) Each package containing a radioactive material that also meets the definition of one or more additional hazards must be labeled as a radioactive material as required by this section and for each additional hazard. For example:

(1) Packages containing the solid nitrates of uranium or thorium must be labeled RADIOACTIVE and OXIDIZER.

(2) Packages containing nitric acid solutions of radioactive material must be labeled RADIOACTIVE and CORROSIVE.

(f) Each package required by this section to be labeled with a RADIOACTIVE label must have two of these labels, affixed to opposite sides of the package. (See § 172.406(e)(3) for freight container label requirements).

(1) The applicable information as required in any blank spaces on the RADIOACTIVE label must be inserted by legible printing (manual or mechanical), using a durable, weather resistant means or marking.

§ 172.404 Labels for mixed and consolidated packaging.

(a) *Mixed packaging.* When hazardous materials having different hazard classes are packed within the same packaging, or within the same outside container or overpack as described in § 173.25 and authorized by § 173.21 of this subchapter, the packaging, outside container or overpack must be labeled as required for each class of hazardous material contained therein.

(b) *Consolidated packaging.* When two or more packages containing compatible hazardous material (see § 173.21) are placed within the same outside container or overpack, the outside container or overpack must be labeled as required for each class of hazardous material contained therein.

§ 172.405 Authorized label modifications.

For a package containing Oxygen, the word "OXYGEN" may be used in the place of the word "OXIDIZER" on the OXIDIZER label provided the letter size and color for OXYGEN are the same as those required for OXIDIZER.

§ 172.406 Placement of labels.

(a) *General.* Except as provided in paragraphs (b) and (e) of this section, each label required by this subpart must be printed on or affixed to the surface of the package near the marked name of contents required by Subpart D of this part.

(b) *Exceptions.* Labels may be printed on or placed on a securely affixed tag, or may be affixed by other suitable means to—

(1) A package that contains no radioactive material and which has dimensions less than those of the required label;

(2) A compressed gas cylinder; and

(3) A package which has such an irregular surface that a label cannot be satisfactorily affixed.

(c) *Placement of multiple labels.* When two or more different labels are required, they must be displayed next to each other.

(d) *Label border.* Each label must be affixed to a background of contrasting color, or must have a dotted or solid line outer border.

(e) *Additional labeling.* When labeling is required, the labels must be displayed on at least two sides or two ends (excluding the bottom) of—

(1) Each package containing a radioactive material;

(2) Each package having a volume of 64 cubic feet or more; and

(3) Each freight container having a volume of 64 cubic feet or more, but less than 640 cubic feet, except when placarded in accordance with § 172.512(b).

(i) Placarding may not be used instead of labeling on a package containing radioactive material.

(ii) When labeled, one of each of the appropriate labels must be displayed on or near the closure.

(f) *Obscured labels.* A label must not be obscured by markings or attachments.

§ 172.407 Label specifications.

(a) Each label, affixed to or printed on a package, must be durable and weather resistant.

(b) Each diamond (square-on-point) label prescribed in this part must be at least 4 inches (101 mm.) on each side with each side having a black solid line border ¼-inch (6.3 mm.) from the edge.

(c) Except for size and color, the printing, inner border, and symbol on each label must be as shown for each label.

(d) The colors for each label must be as specified in this subpart and the specifications for each color must be as prescribed in Appendix A to this part.

(e) The specified label color must extend to the edge of the label in the area designated on each label except the CORROSIVE, MAGNETIZED MATERIAL RADIOACTIVE YELLOW–II, and RADIOACTIVE YELLOW–III labels.

(f) A label may contain form identification information, including the name of its maker, provided that information is printed outside of the solid line inner border in no larger than 10-point type.

(g) A label may contain the United Nations and Inter-Governmental Maritime Consultative Organization (IMCO) hazard class number. The number must be—

(1) Black, unless it is on a CORROSIVE label when it must be white;

(2) Located in the lower corner of the label, and

(3) Approximately 0.25-inch (6.3 mm.) high.

(h) For import shipments only, a label conforming to § 172.401 affixed to a package in another country may contain inscriptions required by the country of origin.

(i) The dotted line border shown on each label is not part of the label specification, except when used as an alternative for the solid line outer border to meet the requirements of § 172.406(d).

§ 172.411 EXPLOSIVE A, EXPLOSIVE B, and EXPLOSIVE C labels.

(a) Except for size and color, the EXPLOSIVE A, EXPLOSIVE B, and EXPLOSIVE C labels must be as follows:

(b) In addition to complying with § 172.407, the EXPLOSIVE A, EXPLOSIVE B, and EXPLOSIVE C labels must be orange. The printing and symbol must be black.

§ 172.415 NON-FLAMMABLE GAS label.

(a) Except for size and color, the NON-FLAMMABLE GAS label must be as follows:

(b) In addition to the requirements specified in § 172.407, the NON-FLAMMABLE GAS label must be green. The symbol and printing must be black.

§ 172.416 POISON GAS label.

(a) Except for size and color, the POISON GAS label must be as follows:

(b) In addition to complying with § 172.407, the POISON GAS label must be white. The printing must be black, and the symbol must be black and white.

§ 172.417 FLAMMABLE GAS label.

(a) Except for size and color, the FLAMMABLE GAS label must be as follows:

(b) In addition to complying with § 172.407, the FLAMMABLE GAS label must be red. The printing and symbol must be black.

§ 172.419 FLAMMABLE LIQUID label.

(a) Except for size and color, the FLAMMABLE LIQUID label must be as follows:

(b) In addition to complying with § 172.407, the FLAMMABLE LIQUID label must be red. The printing and symbol must be black.

§ 172.420 FLAMMABLE SOLID label.

(a) Except for size and color, the FLAMMABLE SOLID label must be as follows:

(b) In addition to complying with § 172.407, the FLAMMABLE SOLID label must be white with vertical red stripes equally spaced on each side of a red stripin the center of the label. The rectangle for the words "FLAMMABLE SOLID" must be white. The printing and symbol must be black with the symbol overprinted. The words "FLAMMABLE SOLID" must not contact any red stripe. The white stripes must be sufficiently wider than the red stripes to make them appear visually equal in width.

§ 172.422 SPONTANEOUSLY COMBUSTIBLE label.

(a) Except for size and color, the SPONTANEOUSLY COMBUSTIBLE label must be as follows:

(b) In addition to complying with § 172.407, the SPONTANEOUSLY COMBUSTIBLE label must be red in the lower half and white in the upper half. The symbol and printing must be black.

(c) If use of the SPONTANEOUSLY COMBUSTIBLE label is required by the regulations of another country, it may be used in addition to the labels required by §§ 172.400 and 172.402.

§ 172.423 DANGEROUS WHEN WET label.

(a) Except for size and color, the DANGEROUS WHEN WET label must be as follows:

(b) In addition to complying with § 172.407, the DANGEROUS WHEN WET LABEL must be blue. The printing and symbol must be black.

(c) If use of the DANGEROUS WHEN WET label is required by the regulations of another country, it may be used in addition to the labels required by §§ 172.400 and 172.402.

§ 172.426 OXIDIZER label.

(a) Except for size and color, the OXIDIZER label must be as follows:

(b) In addition to complying with § 172.407, the OXIDIZER label must be yellow. The printing and symbol must be black.

§ 172.427 ORGANIC PEROXIDE label.

(a) Except for size and color, the ORGANIC PEROXIDE label must be as follows:

(b) In addition to complying with § 172.407, the ORGANIC PEROXIDE label must be yellow. The printing and symbol must be black.

§ 172.430 POISON label.

(a) Except for size and color, the POISON label must be as follows:

(b) In addition to complying with § 172.407, the POISON label must be white. The printing and symbol must be black.

§ 172.432 IRRITANT label.

(a) Except for size and color, the IRRITANT label must be as follows:

(b) In addition to complying with § 172.407, the IRRITANT label must be white. The word "IRRITANT" must be red.

(c) For export shipments, if use of the following label is required for irritants by the regulations of another country, it may be used in addition to the label for irritants required by § 172.400 and described in § 172.432. In addition to complying with § 172.407, this additional label for irritant, except for size and color, must be as follows:

(d) The printing and symbol must be black on a white background.

§ 172.436 RADIOACTIVE WHITE-I label.

(a) Except for size and color, the RADIOACTIVE WHITE-I label, must be as follows:

(b) In addition to complying with § 172.407, the RADIOACTIVE WHITE-I label must be white. The printing and symbol must be black except for the "I" which must be red.

§ 172.438 RADIOACTIVE YELLOW-II label.

(a) Except for size and color, the RADIOACTIVE YELLOW-II label, must be as follows:

(b) In addition to complying with § 172.407, the RADIOACTIVE YELLOW-II label must be yellow in the top half and white in the lower half. The printing and symbol must be black, except for the "II" which must be red.

§ 172.440 RADIOACTIVE YELLOW-III label.

(a) Except for the size and color, the RADIOACTIVE YELLOW-III label must be as follows:

(b) In addition to complying with § 172.407, the RADIOACTIVE YELLOW-III label must be yellow in the top half and white in the lower half. The printing and symbol must be black, except for the "III" which must be red.

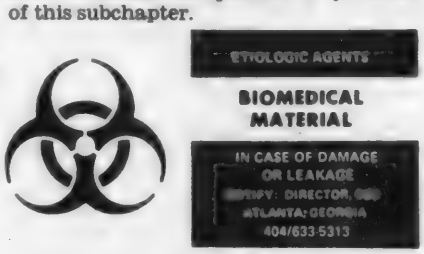
§ 172.442 CORROSIVE label.

(a) Except for size and color, the CORROSIVE label must be as follows:

(b) In addition to complying with § 172.407, the CORROSIVE label must be white in the top half and black in the lower half. The printing must be white and the symbol must be black and white.

§ 172.444 ETIOLOGIC AGENT label.

(a) Each package containing an Etiologic agent subject to this subchapter must be labeled as specified in § 173.388 of this subchapter.

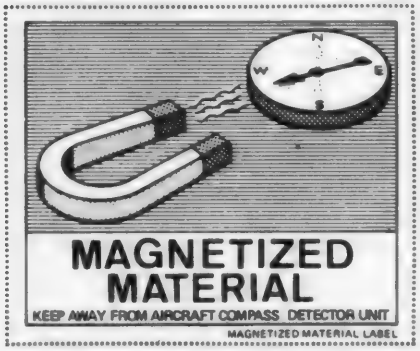


(b) For export shipments, if use of the following label is required by the regulations of another country, it may be used in addition to the label required in paragraph (a) of this section for Etiologic agents. In addition to complying with § 172.407, this additional label for Etiologic agents, except for size and color, must be as follows:

(c) The printing and symbol must be black on a white background.

§ 172.446 MAGNETIZED MATERIAL label.

(a) Except for size and color, the MAGNETIZED MATERIAL label including the label name in the lower border must be as follows:



(b) The MAGNETIZED MATERIAL label must be a rectangle measuring 3⁹⁄₁₆ inches (90 mm.) high and 4⅜ inches (110 mm.) wide. The printing must be blue and the symbol must be white and blue.

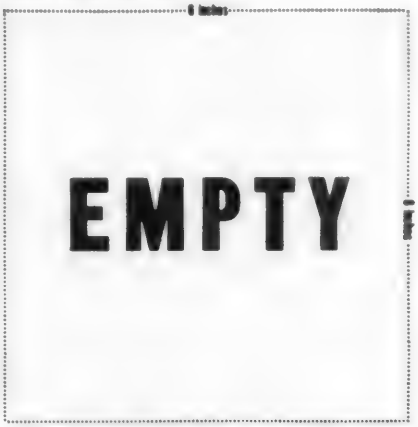
§ 172.448 CARGO AIRCRAFT ONLY label.

(a) Except for size and color, the CARGO AIRCRAFT ONLY (DANGER—PELIGRO) label including the label name in the lower border must be as follows:

(b) The CARGO AIRCRAFT ONLY label must be a rectangle measuring 4⅜ inches (110 mm.) high by 4¾ inches (120 mm.) wide. The printing must be black and the symbol must be black and orange.

§ 172.450 EMPTY label.

(a) Each EMPTY label, except for size, must be as follows:



(1) Each side must be at least 6 inches (152 mm.) with each letter at least 1 inch (25.4 mm.) in height.

(2) The label must be white with black printing.

Subpart F—Placarding

§ 172.500 Applicability of placarding requirements.

(a) Each person who offers for transportation or transports any hazardous material subject to this subchapter shall comply with the applicable placarding requirements of this subpart.

(b) This subpart does not apply to Etiologic Agents, or hazardous materials classed as ORM–A, B, C, or D.

§ 172.502 Prohibited placarding.

(a) No person may affix or display on a portable tank, freight container, motor vehicle, or rail car any placard described in this subpart unless—

(1) The material being offered or transported is a hazardous material, and

(2) The placard represents a hazard of the hazardous material being offered or transported.

(b) No person may affix or display any sign or other device on a motor vehicle, rail car, portable tank, or freight container, that by its color, design, shape, or content could be confused with any placard prescribed in this subpart.

§ 172.504 General placarding requirements.

(a) Except as otherwise provided in this subchapter, each motor vehicle and rail car containing any quantity of a hazardous material must be placarded with the type of placards specified in the following tables and other placarding requirements of this subpart, including the specifications for the placards named in the tables and described in detail in §§ 172.519 through 172.558.

TABLE 1

If the motor vehicle or rail car contains a material classed (described) as—	The motor vehicle or rail car must be placarded on each side and each end—
Class A explosives	EXPLOSIVES A.[1]
Class B explosives	EXPLOSIVES B.[2]
Poison A	POISON GAS.[1]
Flammable solid (DANGEROUS WHEN WET label only).	FLAMMABLE SOLID W.[3]
Radioactive material	RADIOACTIVE.[4 5]
Radioactive material:	
Uranium hexafluoride, fissile (containing more than 0.7 pct U^{235}).	RADIOACTIVE AND CORROSIVE.
Uranium hexafluoride, low specific activity (containing 0.7 pct or less U^{235}).	RADIOACTIVE AND CORROSIVE.

[1] See sec. 172.510(a).
[2] Placard not required if the freight container, motor vehicle, or rail car contains class A explosives and is placarded EXPLOSIVES A as required.
[3] FLAMMABLE SOLID W placard is required only when the DANGEROUS WHEN WET label is specified in sec. 172.101 for a material classed as a Flammable Solid.
[4] Applies only to any quantity of packages bearing the RADIOACTIVE Yellow III label. (See secs. 173.399 and 172.403 of this subchapter.)
[5] See secs. 173.389(c) and 173.389(o), for full-load shipments of radioactive materials meeting the definition of low specific activity when transported pursuant to sec. 173.392(b).

TABLE 2

If the motor vehicle or rail car contains a material classed (described) as—	The motor vehicle or rail car must be placarded on each side and each end—
Class C explosives	FLAMMABLE.[1]
Nonflammable gas	NONFLAMMABLE GAS.
Nonflammable gas (Chlorine)	CHLORINE.
Nonflammable gas (oxygen, pressurized liquid)	OXYGEN.[2]
Flammable gas	FLAMMABLE GAS.
Combustible liquid	COMBUSTIBLE.[3 4]
Flammable liquid	FLAMMABLE.
Flammable solid	FLAMMABLE SOLID.[5]
Oxidizer	OXIDIZER.
Organic peroxide	ORGANIC PEROXIDE.
Poison B	POISON.
Corrosive material	CORROSIVE.[6]
Irritating material	DANGEROUS.

[1] Applies only to a class C explosive required to be labeled with an EXPLOSIVE C label.
[2] OXYGEN placards may be used to identify liquefied pressurized oxygen contained in a manner so it does not meet the definition in sec. 173.300 of this subchapter.
[3] COMBUSTIBLE placard required only when a material classed as a combustible liquid is transported in a packaging having a rated capacity of 110 gal or more, cargo tank, or a tank car.
[4] A FLAMMABLE placard may be used on a cargo tank and a portable tank during transportation by highway.
[5] A FLAMMABLE placard may be displayed in place of a FLAMMABLE SOLID placard except when a DANGEROUS WHEN WET label is specified for the material in sec. 172.101. (See table 1, this section.)
[6] Not required for a material that is corrosive only to steel as defined in § 173.240 of this subchapter when transported in a portable tank, cargo tank or tank car by rail or highway.

(b) A freight container, motor vehicle or rail car containing two or more materials covered by Table (2) may be placarded DANGEROUS in place of the separate placarding specified for each material in Table (2) if no more than 5,000 pounds (aggregate gross weight) of one class of material is loaded therein at one loading facility. This paragraph does not apply to a portable tank, cargo tank, or tank car.

(c) No placard is required on a—

(1) Motor vehicle containing less than 1,000 pounds (aggregate gross weight) of one or more materials covered by Table (2), or

(2) Rail car loaded with freight containers or motor vehicles when each freight container or motor vehicle contains less than 1,000 pounds (aggregate gross weight) of one or more materials, covered by Table (2).

This paragraph does not apply to portable tanks, cargo tanks, or tank cars.

§ 172.506 Providing and affixing placards: highway.

(a) Each person offering a motor carrier a hazardous material for transportation by highway shall provide to the motor carrier the required placards for the material prior to or at the same time the material is offered for transportation, unless the carrier's motor vehicle is already placarded for the material as required by this subpart.

(1) No motor carrier may transport a hazardous material in a motor vehicle, unless the placards required for the hazardous material are affixed thereto as required by this subpart.

§ 172.508 Providing and affixing placards: rail.

(a) Each person offering a hazardous material for transportation by rail shall affix to the rail car containing the material, the placards specified by this subpart for the material unless the placards already displayed on motor vehicles, transport containers, or portable tanks that are on the rail car comply with § 172.502 as it pertains to placarding the rail car.

(b) No rail carrier may accept a rail car containing a hazardous material for transportation unless the placards for the hazardous material are affixed thereto as required by this subpart.

§ 172.510 Special placarding provisions: rail.

(a) *Square background required.* Each Explosive A placard, Poison Gas placard and POISON GAS—EMPTY, placard affixed to a rail car must be placed on a square background as described in § 172.527.

(b) *DOME placard.* Each domed tank car containing a flammable liquid having a vapor pressure exceeding 16 p.s.i. at 100° F. (55° C) must have a DOME placard affixed thereto as specified in § 173.119(h) of this subchapter.

(c) *EMPTY placard.* Each empty tank car must be placarded with an EMPTY placard as required and described in § 172.525 or paragraph (a) of this section, as appropriate, that corresponds to the placard that was required for the material the tank car last contained unless the tank car has been—

(1) Reloaded with a material not subject to this subchapter; or

(2) Sufficiently cleaned of residue and purged of vapor to remove any potential hazard.

(d) *FUMIGATION placard.* Each freight container, motor vehicle, and rail car containing lading that has been fumigated or treated with poisonous liquid, solid, or gas, and that is offered for transportation by rail must have the placard specified in § 173.426 of this subchapter affixed on or near each door.

§ 172.512 Freight container.

(a) *Capacity of 640 cubic feet or more.* Each person who offers for transportation a hazardous material in a freight container having a capacity of 640 cubic feet or more shall affix to the freight container the placards required by this subpart according to the following table:

Freight container placarding table

When the mode(s) of transportation will be—				Use placards required by this subpart for—
Highway	Rail	Air	Water	
×				Highway.[1]
	×			Rail.[1]
×	×			Do.
×	×	×		Rail.[2]
×	×	×	×	Do.
×	×		×	Do.
×			×	Highway.[2]
×		×		Do.
×			×	Do.
	×	×		Rail.[2]
	×		×	Do.
	×	×	×	Do.
		×		Highway.[2]
			×	Do.

[1] The provisions of sec. 172.504(c) apply.
[2] The provisions of sec. 172.504(c) do not apply.

(b) *Capacity less than 640 cubic feet.* Each person who offers for transportation by air a hazardous material in a freight container having a capacity of less than 640 cubic feet shall affix one placard of the type specified by paragraph (a) of this section unless the freight container is labeled in accordance with § 172.405, or contains radioactive materials requiring the RADIOACTIVE YELLOW III label and is placarded with one RADIOACTIVE placard and is labeled in accordance with § 172.406(e). When hazardous materials are offered for transportation, not involving air transportation, in a freight container having a capacity of less than 640 cubic feet, the freight container need not be placarded. However, it must be labeled in accordance with Subpart E of this part.

(c) Notwithstanding paragraphs (a) and (b) of this section, packages containing hazardous materials, other than ORM–D offered for transportation by air in freight containers are subject to the inspection requirements of § 175.30 of this subchapter.

§ 172.514 Cargo tanks and portable tanks.

(a) Each person who offers for transportation a cargo tank or a portable tank containing a hazardous material shall affix the placards specified for the material in accordance with § 172.504. However, a portable tank having a rated capacity of less than 1,000 gallons need be placarded on only two opposite sides.

(b) Each cargo tank and portable tank that is required to be placarded when it contains a hazardous material must remain placarded when it is emptied unless it is—

(1) Reloaded with a material not subject to this subchapter; or

(2) Sufficiently cleaned and purged of vapors to remove any potential hazard.

§ 172.516 Visibility and display of placards.

(a) Each placard on a motor vehicle and each placard on a rail car must be readily visible from the direction it faces except from the direction of another motor vehicle or rail car to which the motor vehicle or rail car is coupled. This requirement may be met by the placards displayed on the freight containers or portable tanks loaded on a motor vehicle or rail car.

(b) The required placarding of the front of a motor vehicle may be on the front of a truck-tractor instead of or in addition to the placarding on the front of the cargo body to which a truck-tractor is attached.

(c) Each placard on a transport vehicle, portable tank or freight container must—

(1) Be securely attached or affixed thereto or placed in a holder thereon. (See Appendix C to this part.)

(2) Be located clear of appurtenances and devices such as ladders, pipes, doors, and tarpaulins;

(3) So far as practicable, be located so that dirt or water is not directed to it from the wheels of the transport vehicle;

(4) Be located away from any marking (such as advertising) that could substantially reduce its effectiveness, and in any case at least 3 inches (76.0 mm.) away from such marking.

(5) Have the words printed on it displayed horizontally, reading from left to right;

(6) Be maintained by the carrier in a condition so that the format, legibility, color, and visibility of the placard will not be substantially reduced due to damage, deterioration, or obscurement by dirt or other matter.

(d) Recommended specifications for a placard holder are set forth in Appendix C of this part. Except for a placard holder similar to that contained in Appendix C to this part, the means used to attach a placard may not obscure any part of its surface other than the borders.

(e) A placard or placard holder may be hinged provided the required format, color, and legibility of the placard are maintained.

§ 172.519 General specifications for placards.

(a) A placard may be made of any plastic, metal, or other material that is equal to or better in strength and durability than the tagboard specified in paragraph (b) of this section. Also, reflective or retroreflective materials may be used on a placard providing the prescribed colors, strength and durability are maintained.

(b) A placard made of tagboard must be of material that has—

(1) A quality at least equal to that designated commercially as white tagboard;

(2) A weight of 125 pounds per ream of 24 by 36-inch sheets;

(3) The ability to pass a 60 p.s.i. Mullen test; and

(4) The ability to withstand open weather exposure for 30 days without a substantial reduction in effectiveness.

(c) A placard may contain form identification information, including the name of its maker if that information is printed in the outer ½-inch (12.7 mm.) border in no larger than 10-point type.

(d) The hazard class and division number prescribed for dangerous goods in the United Nations Recommendations entitled "Transport of Dangerous Goods (1970)" may be entered on each placard in the lower corner of the diamond. The numerals should be approximately 0.75-inch (19.0 mm.) in height and black on each placard except the CORROSIVE placard. The numbers on the CORROSIVE placard should be white.

(e) The color for each placard must be as specified in this subpart and the specifications for each color must be as prescribed in Appendix A to this part.

NOTE: Each placard with the ½-inch (12.7 mm.) border is shown with a dotted line outer border to indicate the full size of the placard. This dotted line border is not part of the prescribed placard.

(f) Dimensional specifications for placards are prescribed in Appendix B to this part.

§ 172.521 DANGEROUS placard.

(a) Except for size and color, the DANGEROUS placard must be as follows:

(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the DANGEROUS placard must have a red upper and lower triangle with the center and ½-inch (12.7 mm.) border white. The inscription must be black with the ⅛-inch (3.2 mm.) border marker in the white area at each end of the inscription red.

§ 172.522 EXPLOSIVES A placard.

(a) Except for size and color, the EXPLOSIVES A placard must be as follows:

(b) In addition to meeting the requirements of § 172.519, and Appendix B to this Part, the EXPLOSIVES A placard must be orange with a ½ inch (12.7 mm.) white outer border. The symbol and print must be black.

§ 172.524 EXPLOSIVES B placard.

(a) Except for size and color, the EXPLOSIVES B placard must be as follows:

(b) In addition to meeting the requirements § 172.519, and this part, the EXPLOSIVES B placard must be orange with a ½-inch (12.7 mm.) white outer border. The symbol and print must be black.

§ 172.525 Standard requirements for the EMPTY placard.

(a) Each EMPTY placard must be as follows:

(1) The triangle at the top of the placard must be black. The word "EMPTY" must be white.

(2) The midsection and lower triangle on the EMPTY placard must be as specified in § 172.519 and Appendix B to this part, and §§ 172.528, 172.530, 172.532, 172.436, 172.540, 172.542, 172.544, 172.550, 172.552, 172.554, and 172.558 as appropriate for the residue of the commodity being transported and required by this subchapter to be placarded.

(b) The top part of each EMPTY placard must be as illustrated on the FLAMMABLE—EMPTY placard, which, except for size and color, must be as follows:

(c) The EMPTY placard must be as shown in paragraph (b) of this section and may be—

(1) A separate placard;

(2) On the reverse side of a placard, or

(3) A composite made by covering the top triangle of the appropriate placard with a black triangle bearing the word "EMPTY" in white letters.

§ 172.527 Background requirements for certain placards on rail cars.

(a) Except for size and color, the square background required by § 172.510 (a) for certain placards on rail cars must be as follows:

(b) In addition to meeting the requirements of § 172.519 for minimum durability and strength, the square background must consist of a white square measuring 14¼ inches (362.0 mm.) on each side surrounded by a black border extending to 15¼ inches (387.0 mm.) on each side.

§ 172.528 NON-FLAMMABLE GAS placard.

(a) Except for size and color, the NON-FLAMMABLE GAS placard must be as follows:

(b) In addition to meeting the requirement of § 172.519, and Appendix B to this Part, the NON-FLAMMABLE GAS placard must be green with the symbol, inscription, and ½ inch (12.7 mm.) border white.

§ 172.530 OXYGEN placard.

(a) Except for size and color, the OXYGEN placard must be as follows:

(b) In addition to meeting the requirements of § 172.519, and Appendix B to this Part, the OXYGEN placard must be yellow with ½ inch (12.7 mm.) white border. The symbol and inscription must be black.

§ 172.532 FLAMMABLE GAS placard.

(a) Except for size and color, the FLAMMABLE GAS placard must be as follows:

(b) In addition to meeting the requirements of § 172.519, and Appendix B to this Part, the FLAMMABLE GAS placard must be red with the symbol, inscription, and ½ inch (12.7 mm.) border white.

§ 172.536 CHLORINE placard.

(a) Except for size, the CHLORINE placard must be as follows:

(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the CHLORINE placard must be a white 10¾ inches (273.0 mm.) square-on-point with a ⅛-inch (3.2 mm.) black solid line border ½-inch (12.7 mm.) in from each edge. The symbol and inscription must be black.

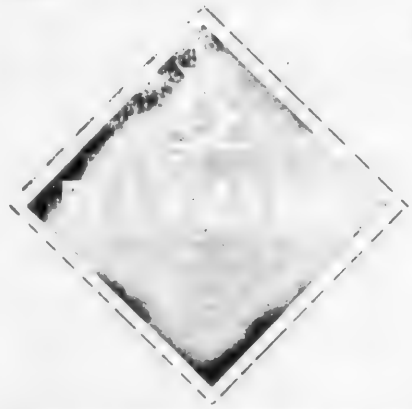
§ 172.540 POISON GAS placard.

(a) Except for size, the POISON GAS placard must be as follows:

(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the POISON GAS placard must be a white 10¾ inches (273.0 mm.) square-on-point with a ⅛-inch (3.2 mm.) black solid line border ½-inch (12.7 mm.) in from each edge. The symbol and inscription must be black.

§ 172.542 FLAMMABLE placard and modification.

(a) Except for size and color, the FLAMMABLE placard must be as follows:



(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part the FLAMMABLE placard must be red with white symbol, inscription, and ½-inch (12.7 mm.) border.

(c) The word "GASOLINE" may be used in place of the word "FLAMMABLE" on the placard that is displayed on a cargo tank or portable tank being used to transport gasoline by highway. The word "GASOLINE" must be in letters of the same size and color as those in the word "FLAMMABLE."

§ 172.544 COMBUSTIBLE placard and modification.

(a) Except for size and color, the COMBUSTIBLE placard must be as follows:

(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the COMBUSTIBLE placard must be red with white symbol, inscription, and ½-inch (12.7 mm.) border.

(c) The words "FUEL OIL" may be used in place of the word "COMBUSTIBLE" on the placard that is displayed on a cargo tank or portable tank being used to transport by highway fuel oil that is not classed as a flammable liquid. The words "FUEL OIL" must be in letters of the same size and color as those in the word "COMBUSTIBLE."

§ 172.546 FLAMMABLE SOLID placard.

(a) Except for size and color, the FLAMMABLE SOLID placard must be as follows:

(b) In addition to complying with § 172.519 and Appendix B to this part the FLAMMABLE SOLID placard must be white with seven vertical red stripes and a ½-inch (12.7 mm.) white border. The symbol and inscription must be black.

§ 172.548 FLAMMABLE SOLID W placard.

(a) Except for size and color, the FLAMMABLE SOLID W placard must be as follows:

(b) (1) The triangle at the top of the FLAMMABLE SOLID W placard must be blue with a white symbol, otherwise, the specifications for the FLAMMABLE SOLID W placard are the same as those for the FLAMMABLE SOLID placard.

(2) The FLAMMABLE SOLID W placard may be:

(i) A separate placard;

(ii) On the reverse side of a placard; or

(iii) A composite made by covering the top triangle of the FLAMMABLE SOLID placard with the blue triangle and white symbol as shown in paragraph (a) of this section.

§ 172.550 OXIDIZER placard.

(a) Except for size and color, the OXIDIZER placard must be as follows:

(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the OXIDIZER placard must be yellow with a ½-inch (12.7 mm.) white border. The symbol and inscription must be black.

§ 172.552 ORGANIC PEROXIDE placard.

(a) Except for size and color, the ORGANIC PEROXIDE placard must be as follows:

(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part the ORGANIC PEROXIDE placard must be yellow with a ½-inch (12.7 mm.) white border. The symbol and inscription must be black.

§ 172.554 POISON placard.

(a) Except for size, the POISON placard must be as follows:

(b) In addition to meeting the requirements of § 172.519, and Appendix B to this Part, the POISON placard must be white with a ⅛-inch (3.2 mm.) black solid line border ½-inch (12.7 mm.) in from the edge. The symbol and inscription must be black.

§ 172.556 RADIOACTIVE placard.

(a) Except for size and color, the RADIOACTIVE placard must be as follows:

(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the RADIOACTIVE placard must have the top portion yellow with the symbol black. The lower portion must be white and the inscription black.

§ 172.558 CORROSIVE placard.

(a) Except for size, the CORROSIVE placard must be as follows:

(b) In addition to meeting the requirements of § 172.519, and Appendix B to this part, the CORROSIVE placard must have the center and lower area black except for the letters in the word "CORROSIVE" which must be white. The symbol must be black and white.

APPENDIX A: SPECIFICATIONS FOR COLORS

Specifications for colors [1] (in Munsell notations) on labels and placards are as follows:

[1] Black and colors on labels and placards must be able to withstand a 72 hour fadeometer test, and to withstand open weather exposure for at least 30 days without a substantial reduction in effectiveness.

TABLE 1.—*Paint, lacquer, enamel, and plastic color specifications*

Color	Central	Tolerances					
		Hue +	Hue −	Value +	Value −	Chroma [1] +	Chroma [2] − −
Red	7.5R 4.0/14	8.5R	6.5R	4.5/	3.5/	/16	/12
Orange	5.0YR 6.0/15	6.25YR	3.75YR	6.5/	5.5/	/16	/13
Yellow	5.0Y 8.0/12	6.5Y	3.5Y	8.5/	7.5/	/14	/10
Green	7.5G 4.0/9	0.5BG	5.0G	4.5/	3.5/	/11	/7 /6
Blue	2.5PB 3.5/10	4.5PB	10.0B	4.0/	3.0/	/12	/8
Purple	10.0P 4.5/10	2.5RP	7.5P	5.0/	4.0/	/12	/8 /6.5

[1] The maximum chroma is not limited.
[2] For the colors green and purple, the minimum saturation (chroma) limits for porcelain enamel on metal are lower than for most other surface coatings. Therefore, the minimum chroma limits for porcelain enamel on metal for these 2 colors may be as low as that shown in the chroma double minus column.

NOTE.—Color chips for paint, enamel, etc., are available from the Department of Transportation, Office of Hazardous Materials Operations, MTH-21, Washington, D.C. 20590, as a set of the 6 colors and prescribed tolerances for $5.50 per set.

TABLE 2.—*Printing ink color specifications* [1]

Color	Series	Munsell notation [2]
Red:		
Central series	Central color	6.8R 4.47/12.8
	Grayish	7.2R 4.72/12.2
	Purple	6.4R 4.49/12.7
	Purple and vivid.	6.1R 4.33/13.1
	Vivid	6.7R 4.29/13.2
	Orange	7.3R 4.47/12.8
	Orange and grayish.	7.65R 4.70/12.4
Light series	Light	7.0R 4.72/13.2
	Light and orange.	7.4R 4.96/12.6
	Light and purple.	6.6R 4.79/12.9
Dark series	Dark A	6.7R 4.19/12.5
	Dark B	7.0R 4.25/12.35
	Dark and purple.	7.5R 4.23/12.4
Orange:		
Central series	Central color	5.0YR 6.10/12.15
	Yellow and grayish A.	5.8YR 6.22/11.7
	Yellow and grayish B.	6.1YR 6.26/11.85
	Vivid	5.1YR 6.07/12.3
	Red and vivid A.	3.9YR 5.87/12.75
	Red and vivid B.	3.6YR 5.91/12.6
	Grayish	4.9YR 6.10/11.9
Orange:—Continued		
Light series	Light and vivid A.	5.8YR 6.78/12.7
	Light and yellow.	6.0YR 6.80/12.8
	Light and vivid B.	4.9YR 6.60/12.9
Dark series	Dark and yellow.	5.8YR 5.98/11.0
	Dark A	5.1YR 5.80/11.1
	Dark B	5.0YR 5.79/11.0
Yellow:		
Central series	Central color	4.3Y 7.87/10.3
	Vivid A	4.5Y 7.82/10.8
	Vivid B	3.8Y 7.72/11.85
	Vivid and orange.	3.2Y 7.72/10.8
	Grayish A	4.1Y 7.95/9.7
	Grayish B	5.1Y 8.06/9.05
	Green-yellow	5.2Y 7.97/9.9
Light series	Light	5.4Y 8.59/10.5
	Light and green-yellow.	5.4Y 8.56/11.2
	Light and vivid	4.4Y 8.45/11.4
Dark series	Dark and green-yellow.	4.4Y 7.57/9.7
	Dark and orange A.	3.4Y 7.30/10.4
	Dark and orange B.	3.5Y 7.41/10.0

See footnotes at end of table.

TABLE 2.—*Printing ink color specifications* [1]

Color	Series	Munsell notation [2]
Green:		
Central series	Central color	9.7G 4.26/7.75
	Grayish	10G 4.46/7.5
	Blue A	1.4BG 4.20/7.4
	Blue B	1.0BG 4.09/7.75
	Vivid	8.4G 4.09/8.05
	Vivid green-yellow.	7.0G 4.23/8.0
	Green-yellow	7.85G 4.46/7.7
Light series	Light and vivid	9.5G 4.45/8.8
	Light and blue	0.2G 4.31/8.8
	Light and green-yellow.	8.3G 4.29/9.05
Dark series	Dark and green-yellow.	7.1G 4.08/7.1
	Dark and grayish.	9.5G 4.11/6.9
	Dark	8.5G 3.97/7.2
Blue:		
Central series	Central color	3.5PB 3.94/9.7
	Green and grayish A.	2.0PB 4.35/8.7
	Green and grayish B.	1.7PB 4.22/9.0
	Vivid	2.9PB 3.81/9.7
	Purple and vivid A.	4.7PB 3.53/10.0
	Purple and vivid B.	4.0PB 3.71/9.9
	Grayish	3.75PB 4.03/9.1
Light series	Light and green A.	1.7PB 4.32/9.2
	Light and green B.	1.5PB 4.11/9.6
	Light and vivid	3.2PB 3.95/10.05
Dark series	Dark and grayish.	3.9PB 4.01/8.7
	Dark and purple A.	4.8PB 3.67/9.3
	Dark and purple B.	5.2PB 3.80/9.05
Purple:		
Central series	Central color	9.5P 4.71/11.3
	Red	1.0RP 5.31/10.8
	Red and vivid A.	1.4RP 5.00/11.9
	Red and vivid B.	0.2RP 4.39/12.5
	Vivid	8.0P 4.04/12.0
	Blue	7.0P 4.39/10.8
	Grayish	8.8P 5.00/10.3
Light series	Light and red A.	0.85RP 5.56/11.1
	Light and red B.	1.1RP 5.27/12.3
	Light and vivid	9.2P 4.94/11.95
Dark series	Dark and grayish.	9.6P 4.70/10.9
	Dark and vivid	8.4P 4.05/11.6
	Dark and blue	7.5P 4.32/10.5

[1] Black and colors of printing inks on labels and placards must be able to withstand a 72-hr fadeometer test, and to withstand open weather exposure for at least 30 days without a substantial reduction in effectiveness.

[2] Printing ink central colors and tolerances approximate those of the color standards for paint, enamel, etc., while allowing for expected differences from production methods and materials.

NOTE.—Printing ink color chips are available from the Department of Transportation, Office of Hazardous Materials Operations, MTH-21, Washington, D.C. 20590, as a set of 6 colors and prescribed tolerances for $12.50 per set.

APPENDIX B—DIMENSIONAL SPECIFICATION FOR PLACARDS

1. *Placard specifications.* (a) The print type on each placard must be Franklin Gothic Condensed.

(b) Each square-on-point placard must measure 10¾ inches (273.0 mm.) on each side, the outer, ½-inch (12.7 mm.) of which must be white.

NOTE: The measurements in these specifications may be rounded to the nearest 1/32 of an inch and to the nearest whole millimeter.

(c) Specifications for each placard to augment those in paragraphs (1) (a) and (b) of this Appendix and those contained in subpart F, Part 172 of this subchapter are as follows:

(1) *DANGEROUS placard.* The word "DANGEROUS" must be across the center of the placard and made with letters 27/32-inch (56.3 mm.) high with a ⅜-inch (9.5 mm.) stroke. The white section of the placard must be centered across the placard and 5 inches (127 mm.) wide. The two ends of the white area must have an ⅛-inch (3.2 mm.) red solid line border to indicate the outer ½-inch (12.7 mm.) white placard border. The placard color must be red, white, and black.

(2) *EXPLOSIVES A placard.* The word "EXPLOSIVES" must be across the center area of the placard and made with letters 1⅞ inches (47.6 mm.) high with a 5/16-inch (7.9 mm.) stroke. The top of the letters in the word "EXPLOSIVES" must be 1½ inches.

(3) *EXPLOSIVES B placard.* Except for the letter "B", the EXPLOSIVES B placard specifications are the same as those for the EXPLOSIVES A placard. The location, height, and stroke for the letter "B" are the same as those prescribed for the letter "A".

(4) *NON-FLAMMABLE GAS placard.* The word "NON-FLAMMABLE" must be across the center area with the word "GAS" centered beneath the word "NON-FLAMMABLE." The letters in both words must be 1⁹/₁₆ inches (39.6 mm.) high and made with a 9/32-inch (7.1 mm.) stroke. The top of the letters in the words "NON-FLAMMABLE" must be 1⅝ inches (41.3 mm.) above the placard horizontal center line, and the top of the letters in the word "GAS" must be 9/16-inch (14.3 mm.) below the placard horizontal center line. The base of the symbol must be 3⅛ inches (79.3 mm.) above the horizontal centerline with the top $4^{15}/_{16}$ inches (125.4 mm.) above the placard horizontal center line. The lower portion of the cylinder (symbol) must be 17/32-inch (13.5 mm.) wide with the neck ¼-inch (6.3 mm.) wide. The symbol must be 3⁹/₁₆ inches (90.4 mm.) long. The placard color must be green and white.

(5) *OXYGEN placard.* The word "OXYGEN" must be centered on the placard horizontal center line in letters 2½ inches (63.5 mm.) high and made with a 7/16-inch (11.1 mm.) stroke. The base of the bar in the symbol must be $2^{1}/_{16}$ inches (52.4 mm.) above the placard horizontal center line. The overall height of the symbol must be $4^{5}/_{16}$ inches (109.5 mm.) with the bar measuring ⅛-inch (3.2 mm.) wide and, $2^{3}/_{16}$ inches (55.5 mm.) long.

(3) *EXPLOSIVES B placard.* Except for the letter "B", the EXPLOSIVES B placard specifications are the same as those for the EXPLOSIVES A placard. The location, height, and stroke for the letter "B" are the same as those prescribed for the letter "A".

(4) *NON-FLAMMABLE GAS placard.* The word "NON-FLAMMABLE" must be across the center area with the word "GAS" centered beneath the word "NON-FLAMMABLE." The letters in both words must be 1⁹/₁₆ inches (7.1 mm.) stroke. The top of the letters in the words "NON-FLAMMABLE" must be 1⅝ inches (41.3 mm.) above the placard horizontal center line, and the top of the letters in the word "GAS" must be 9/16-inch (14.3 mm.) below the placard horizontal center line. The base of the symbol must be 3⅛ inches (79.3 mm.) above the horizontal center line with the top $4^{15}/_{16}$ inches (125.4 mm.) above the placard horizontal center line. The lower portion of the cylinder (symbol) must be 17/32-inch (13.5 mm.) wide with the neck ¼ inch (6.3 mm.) wide. The symbol must be 3⁹/₁₆ inches (90.4 mm.) long. The placard color must be green and white.

(5) *OXYGEN placard.* The word "OXYGEN" must be centered on the placard horizontal center line in letters 2½ inches (63.5 mm.) high and made with a 7/16-inch (11.1 mm.) stroke. The base of the bar in the symbol must be $2^{1}/_{16}$ inches (52.4 mm.) above the placard horizontal center line. The overall height of the symbol must be $4^{5}/_{16}$ (109.5 mm.) with the bar measuring ⅛-inch (3.2 mm.) wide and, $2^{3}/_{16}$ inches (55.5 mm.) long.

The symbol must be 2⅜ inches (60.3 mm.) across the widest part.

The outer ½-inch (12.7 mm.) of the 10¾ inches (273.0 mm.) square on-point placard must be white. The placard color must be yellow, black, and white.

(6) *FLAMMABLE GAS placard.* The word "FLAMMABLE" must be across the placard center area with the word "GAS" centered beneath the word "FLAMMABLE". The letters in both words must be 2 inches (50.8 mm.) high and made with a ⅜-inch (9.5 mm.) stroke. The top of the letters in the word "FLAMMABLE" must be 1⅝ inches (41.3 mm.) above the placard horizontal center line and the top of the word "GAS" must be ⅝-inch (15.9 mm.) below the placard horizontal center line. The base of the symbol bar must be 2¼ inches (57.1 mm.) above the placard horizontal center line, and must be $4^{17}/_{32}$ inches (115.1 mm.) high and $3^{5}/_{16}$ inches (84.1 mm.) wide. The bar must be 5/32-inch (4.0 mm.) wide and $3^{5}/_{16}$ inches (84.1 mm.) long. The outer ½ (12.7 mm.) of the 10¾ inches (273.0 mm.) square-on-point placard must be white. The placard color must be red and white.

(7) *CHLORINE placard.* The specifications for the CHLORINE placard are the same as those for the POISON GAS placard except for the word "CHLORINE" and the symbol. The word "CHLORINE" must be centered on the placard horizontal center line in letters 2½ inches (63.5 mm.) high and made with a 7/16-inch (11.1 mm.) stroke. The lowest part of the symbol must be $1^{5}/_{16}$ inches (33.3 mm.) above the placard horizontal center line. The symbol must be $3^{11}/_{16}$ inches (93.6 mm.) high and 5⅛ inches (130.2 mm.) across the widest extremities.

(8) *POISON GAS placard.* The word "POISON" must be across the center area of the placard with the word "GAS" centered beneath the word "POISON." The letters in both words must be $2^{3}/_{16}$ inches (55.5 mm.) high and made with a 13/32-inch (10.3 mm.) stroke. The top of the letters in the word "POISON" must be 2¼ inches (57.1 mm.) above the horizontal center line. The lowest part of the symbol must be 2¾ inches (69.8 mm.) above the horizontal center line and must be 3¼ inches (82.5 mm.) high and $4^{5}/_{16}$ inches (109.5 mm.) across the widest extremeties. The ⅛-inch (3.2 mm.) black border must be ½-inch (12.7 mm.) in from the placard edge. The placard color must be black and white.

(9) *FLAMMABLE placard.* The word "FLAMMABLE" must be centered on the placard horizontal center line. The letters in the word "FLAMMABLE" must be 2 inches (50.8 mm.) high and made with an 1¼-inch (8.7 mm.) stroke. The base of the symbol bar must be 2¼ inches (57.1 mm.) above the placard horizontal center line. The symbol must be $4^{9}/_{16}$ inches (115.9 mm.) wide and $3^{5}/_{16}$ inches (84.1 mm.) high. The bar must be ⅛-inch (3.2 mm.) wide and $3^{5}/_{16}$ inches (84.1 mm.) long. The outer ¼-inch (12.7 mm.) of the 10¾ inches (273.0 mm.) square-on-point placard must be white.

(10) *EMPTY placard.* The specifications for the FLAMMABLE-EMPTY placard is representative of the requirements for the following EMPTY placards: NON-FLAMMABLE GAS; POISON GAS; CHLORINE; OXYGEN; FLAMMABLE GAS; FLAMMABLE; COMBUSTIBLE; OXIDIZER; ORGANIC PEROXIDE; POISON; and CORROSIVE. The specification for each EMPTY placard must be the same as those prescribed for each placard except for the top triangle in the placard. Except for the POISON GAS-EMPTY placard and the ORGANIC PEROXIDE-EMPTY placard, the base of the black triangle must be $1^{7}/_{16}$ inches (36.5 mm.) above the placard horizontal center line with the base of the letters in the word "EMPTY" $2^{11}/_{16}$ inches (68.2 mm.) above the placard horizontal center line. The letters in the word

"EMPTY" must be 1-inch (25.4 mm.) high and made with a 7/32-inch (5.5 mm.) stroke.

For the POISON GAS-EMPTY placard and the ORGANIC PEROXIDE-EMPTY placard, the base of the black triangle must be 2⅜ inches (60.3 mm.) above the placard horizontal center line and the base of the letters in the word "EMPTY" must be 3 3/16 inches (81.0 mm.) above the placard horizontal center line. The letters in the word "EMPTY" must be 1-inch (25.4 mm.) high and made with a 7/32-inch (5.5 mm.) stroke.

The EMPTY placards may be made in any of the three ways cited in § 172.525(c), subpart F of Part 172.

(11) *COMBUSTIBLE placard.* The specification for the COMBUSTIBLE placard are the same as those prescribed for the FLAMMABLE placard except the letters in the word "COMBUSTIBLE" must be 1⅞ inches (47.6 mm.) high and made with an 11/32-inch (8.7 mm.) stroke.

(12) *FLAMMABLE SOLID placard.* The word "FLAMMABLE" must be across the center of the placard with the word "SOLID" centered beneath the word "FLAMMABLE." The letters in the word "FLAMMABLE" must be 2 inches (50.8) mm.) high and made with a ⅜-inch (9.5 mm.) stroke. The letters in the word "SOLID" must be 1½ inches (38.1 mm.) high and made with a ¼-inch (6.3 mm.) stroke. The top of the letters in the word "FLAMMABLE" must be 1 3/16 inches (30.1 mm.) above the placard horizontal center line, and the top of the word "SOLID" must be 1-inch (25.5 mm.) below the placard horizontal center line. The base of the symbol bar must be 2¼ inches (57.1 mm.) above the placard horizontal center line. The symbol must be 4 9/16 inches (115.9 mm.) high and 3 5/16 inches (84.1 mm.) wide. The outer ½-inch (12.7 mm.) of the 10¾ inches (273.0 mm.) square-on-point placard must be white. The red stripes must be approximately 1 3/16 inches (30.1 mm.) wide, and the white stripe must be approximtely 1 1/32 inches (31.0 mm.) wide. The placard must have seven red stripes and six white stripes. One red stripe must be approximately centered on the vertical center line of the placard. The placard color must be black, white, and red.

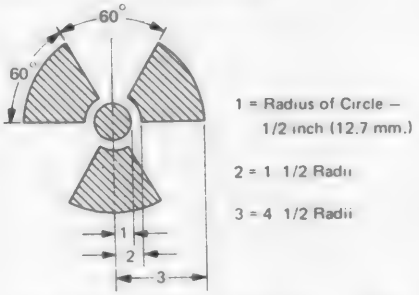
(13) *FLAMMABLE SOLID W placard.* The specifications for the FLAMMABLE SOLID W are the same as the specifications for the FLAMMABLE SOLID placard except for the top triangle. The base of the blue triangle must be 2 inches (50.8 mm.) above the placard horizontal center line with the base of the symbol 2⅜ inches (60.3 mm.) above the placard horizontal center line. The symbol must be 2¼ inches (57.1 mm.) high; 2¾ inches (69.8 mm.) across the top 1¾ inches (44.4 mm.) across the base, and made with a 5/16-inch (7.9 mm.) stroke. The white stripe in the symbol must be 7/32-inch (5.5 mm.) wide and 3½ inches (88.9 mm.) long. The white stripe must slant upward from right to left at an angle of approximately 21 degrees from the horizontal. This placard may be made in any of the three ways cited in § 172.548, subpart F of Part 172.

(14) *OXIDIZER placard.* The word "OXIDIZER" must be centered on the placard horizontal center line in letters 2½ inches (63.5 mm.) high with a 15/32-inch (11.9 mm.) stroke. The base of the bar of the symbol must be 2 1/16 inches (52.4 mm.) above the placard horizontal center line. The overall height of the symbol must be 4 5/16 inches (109.5 mm.) with the bar measuring ⅛-inch (3.2 mm.) wide and 2 3/16 inches (55.6 mm.) long. The symbol must be 2⅜ inches (60.3 mm.) across the widest part. The outer ½-inch (12.7 mm.) of the 10¾ inches (273.0 mm.) placard must be white. The placard color must be yellow, black, and white.

(15) *ORGANIC PEROXIDE placard.* The word "ORGANIC" must be across the center line of the placard with the word "PEROXIDE" centered beneath the word "ORGANIC." The letters in both words must be 2 inches (50.8 mm.) high and made with an 11/32-inch (8.7 mm.) stroke. The top of the letters in the word "ORGANIC" must be 2⅛ inches (54.0 mm.) above the placard horizontal center line, and the top of the letters in the words "PEROXIDE" must be 5/16-inch (7.9 mm.) below the placard horizontal center line. The base of the symbol bar must be 2⅜ inches (73.0 mm.) above the horizontal center line. The symbol must be 3 11/16 inch (93.6 mm.) high and 2 1/16 inches (52.3 mm.) wide with the bar 3/16-inch (4.8 mm.) wide and 1⅞ inches (47.6 mm.) long. The outer ½-inch (12.7 mm.) of the 10¾ inches (273.0 mm.) square-on-point placard must be white. The placard color must be yellow, black, and white.

(16) *POISON placard.* The word "POISON" must be centered on the placard horizontal center line in letters 3 1/16 inches (77.8 mm.) high and made with a 9/16-inch (14.3 mm.) stroke. The lowest point on the symbol must be 2⅛ inches (54.0 mm.) above the placard horizontal center line. The symbol must be 3 11/16 inches (93.6 mm.) high and 4 15/16 inches (125.4 mm.) across the widest extremities. The ⅛-inch (3.2 mm.) black borde: must be ½-inch (12.7 mm.) in from the placard edge. The placard color must be black and white.

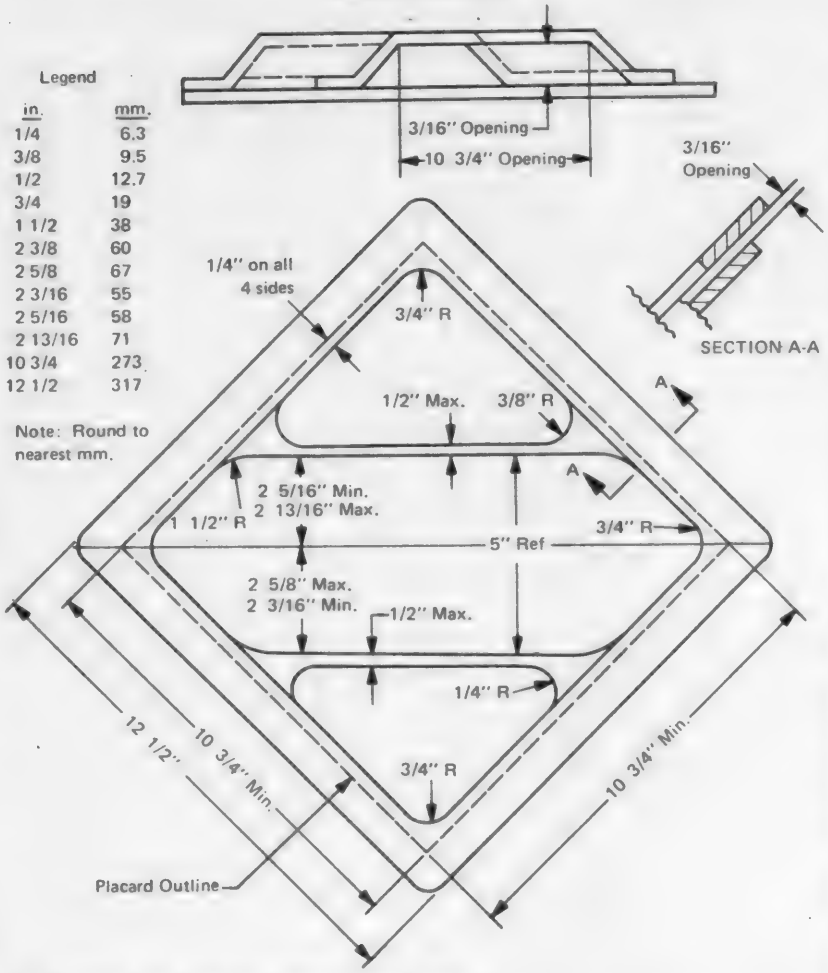
(17) *RADIOACTIVE placard.* The word "RADIOACTIVE" must be centered on the placard horizontal center line in letters 2 inches (50.8 mm.) with an 11/32-inch (8.7 mm.) stroke. The lower edge of the yellow triangle must be 1⅛ inches (28.6 mm.) above the placard horizontal center line. The lower edge of the symbol must be 1¼ inches (31.7 mm.) above the placard horizontal center line. The symbol must be made as shown with the following dimensions:



The lower white area must have a ⅛-inch (3.2 mm.) black solid line border extended from the edge of the yellow area to indicate the outer ½-inch (12.7 mm.) white placard border. The placard color must be yellow, black, and white.

(18) *CORROSIVE placard.* The word "CORROSIVE" must be across the center of the placard and made with letters 2-1/16 inches (52.4 mm.) high with a 11/32-inch (8.7 mm.) stroke. The base of the top white triangle must be 1½ inches (38.1 mm.) above the placard horizontal center line. The lowest part of the symbol must be 1⅝ inches (41.3 mm.) above the placard horizontal center line. The height of the symbol measured from a horizontal line extended from the lowest part of the symbol must be 3¼ inches (82.5 mm.) and the width across the widest part must be 7⅜ inches (187.3 mm.). The upper white area must have a ⅛-inch (3.2 mm.) black solid line border as an extension from the edge of the black area to indicate the outer ½-inch (12.7 mm.) white placard border. The placard color must be black and white.

APPENDIX C—DIMENSIONAL SPECIFICATIONS FOR RECOMMENDED PLACARD HOLDER



9. In Part 173, the Part heading and the Table of Sections are revised to read as follows:

PART 173—SHIPPERS—GENERAL REQUIREMENTS FOR SHIPMENTS AND PACKAGINGS

Subpart A—General

Sec.
173.1 Purpose and scope.
173.2 Classification of a material having more than one hazard as defined in this Part.
173.3 Packaging and exceptions.
173.6 Shipments by air.
173.7 U.S. Government material.
173.8 Canadian shipments and packagings.

Subpart B—Preparation of Hazardous Materials for Transportation

173.21 Prohibited packing.
173.22 Shipper's responsibility.
173.23 Previously authorized packaging.
173.24 Standard requirements for all packages.
173.25 Authorized packages in outside containers.
173.26 Quantity limitations.
173.27 Aircraft quantity limitations.
173.28 Reuse of containers.
173.29 Empty packagings, portable tanks, cargo tanks, and tank cars.
173.30 Loading and unloading of transport vehicles.
173.31 Qualification, maintenance, and use of tank cars.
173.32 Qualification, maintenance, and use of portable tanks.
173.33 Qualification, maintenance, and use of cargo tanks.
173.34 Qualification, maintenance, and use of cylinders.

Subpart C—Explosives; Definitions and Preparation

173.50 An explosive.
173.51 Forbidden explosives.
173.52 Acceptable explosives.
173.53 Definition of class A explosives.
173.54 Ammunition for cannon.
173.55 Ammunition, nonexplosive.
173.56 Ammunition, projectiles, grenades, bombs, mines, gas mines, and torpedoes.
173.57 Rocket ammunition.
173.58 Ammunition for small arms.
173.59 Chemical ammunition, explosive.
173.60 Black powder and low explosives.
173.61 High explosives.
173.62 High explosives, liquid.
173.63 High explosives with liquid explosive ingredient.
173.64 High explosives with no liquid explosive ingredient and propellant explosives, Class A.
173.65 High explosives with no liquid explosive ingredient nor any chlorate.
173.66 Blasting caps, blasting caps with safety fuse, blasting caps with metal clad mild detonating fuse, and electric blasting caps.
173.67 Blasting caps with safety fuse and blasting caps with metal clad mild detonating fuse.
173.68 Detonating primers.
173.69 Detonating fuzes, Class A, with or without radioactive components, detonating fuze parts containing an explosive, boosters, bursters, or supplementary charges.
173.70 Diazodinitrophenol or lead mononitroresorcinate.
173.71 Fulminate of mercury.
173.72 Guanyl nitrosamino guanylidene hydrazine.
173.73 Lead azide.
173.74 Lead styphnate.
173.75 Nitro mannite.
173.76 Nitrosoguanidine.
173.77 Pentaerythrite tetranitrate.
173.78 Tetrazene.
173.79 Jet thrust units (jato), Class A explosives; rocket motors, Class A explosives; igniters, jet thrust (jato), Class A explosives; and igniters, rocket motor, Class A explosives.
173.80 Charged oil well jet perforating guns.
173.86 New explosives and samples for laboratory examination.
173.87 Explosives in mixed packing.
173.88 Definition of class B explosives.
173.89 Ammunition for cannon with empty projectiles, inert-loaded projectiles, solid projectiles, or without projectiles or shell.
173.90 Rocket ammunition with empty, inert-loaded, or solid projectiles.
173.91 Special fireworks.
173.92 Jet thrust units (jato), Class B explosives, rocket motors, Class B explosives; igniters, jet thrust (jato), Class B explosives; igniters, rocket motor, Class B explosives; and starter cartridges, jet engine, Class B explosives.
173.93 Propellant explosives (solid) for cannon, small arms, rockets, guided missiles, or other devices, and propellant explosives (liquid).
173.94 Explosive power devices, Class B.
173.95 Rocket engines (liquid), Class B explosives.
173.100 Definition of Class C explosives.
173.101 Small-arms ammunition.
173.101a Cartridges, practice ammunition.
173.102 Explosive cable cutters; explosive power devices, Class C; explosive release devices, or starter cartridges, jet engine, Class C explosives.
173.103 Blasting caps, blasting caps with safety fuse, blasting caps with metal clad mild detonating fuse, and electric blasting caps, not exceeding 1,000 caps.
173.104 Cordeau detonant fuse, mild detonating fuse, metal clad or flexible linear shaped charges, metal clad.
173.105 Percussion, tracer, combination, time fuzes and tracers.
173.106 Cartridge bags, empty, with black powder igniters, igniters, safety squibs, electric squibs, delay electric igniters, igniter fuse-metal clad, and fuse lighters or fuse igniters.

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173.107 Primers, percussion caps, grenades, empty, primed, and cartridge cases, empty, primed.
173.108 Common fireworks, signal flares, hand signal devices, smoke signals, smoke candles, smoke grenades, smoke pots, and Very signal cartridges.
173.109 Toy caps.
173.110 Charged oil well jet perforating guns, total explosive content in guns not exceeding 20 pounds per motor vehicle.
173.111 Cigarette loads, explosive auto alarms, toy propellant devices, toy smoke devices, trick matches, and trick noise makers, explosive.
173.112 Oil well cartridges.
173.113 Detonating fuzes, Class C explosives.
173.114 Actuating cartridges, explosive, fire extinguisher or valve.

Subpart D—Flammable, Combustible, and Pyrophoric Liquids; Definitions and Preparation

173.115 Flammable, combustible, and pyrophoric liquids; definitions.
173.116 Outage.
173.117 Closing and cushioning.
173.118 Limited quantities of flammable liquids.
173.118a Exceptions for combustible liquids.
173.119 Flammable liquids not specifically provided for.
173.120 Automobiles, motorcycles, tractors, or other self-propelled vehicles.
173.121 Carbon bisulfide (disulfide).
173.122 Acrolein, inhibited.
173.123 Ethyl chloride.
173.124 Ethylene oxide.
173.125 Alcohol, n.o.s. (flammable liquid).
173.126 Nickel carbonyl.
173.127 Nitrocellulose or collodion cotton, fibrous, or nitrostarch, wet; nitrocellulose flakes; colloided nitrocellulose, granular, flake, or block; and lacquer base or lacquer chips, wet.
173.128 Paints and related materials (flammable liquids).
173.129 Polishes, (flammable liquids).
173.130 Refrigerating machines.
173.131 Road asphalt, or tar, liquid.
173.132 Cement liquid, n.o.s.; container cement; linoleum cement; pyroxylin cement; rubber cement; tile cement; wallboard cement; coating solution (flammable liquids).
173.133 Spirits of nitroglycerin.
173.134 Pyrophoric liquids, n.o.s.
173.135 Diethyl dichlorosilane, dimethyl dichlorosilane, ethyl dichlorosilane, ethyl trichlorosilane, methyl trichlorosilane, trimethyl chlorosilane, and vinyl trichlorosilane.
173.136 Methyl dichlorosilane and trichlorosilane.
173.137 Lithium aluminum hydride, ethereal.
173.138 Pentaborane.
173.139 Ethylene imine, inhibited, and propylene imine, inhibited.
173.140 Zirconium, metallic, solutions, or mixtures thereof, liquid.
173.141 Amyl mercaptan, butyl mercaptan, ethyl mercaptan, isopropyl mercaptan, propyl mercaptan, and aliphatic mercaptan mixtures.
173.143 Methylchloromethyl ether, anhydrous.
173.144 Ink (flammable liquid).
173.145 Dimethylhydrazine, unsymmetrical, and methyl hydrazine.
173.146 Heaters for refrigerator cars, flammable liquid fuel type.
173.147 Methyl vinyl ketone, inhibited.
173.148 Monoethylamine.
173.149 Methyl magnesium bromide in ethyl ether in concentrations not over 40 percent.
173.149a Nitromethane.

Subpart E—Flammable Solids, Oxidizers, and Organic Peroxides; Definitions and Preparation

173.150 Flammable solid; definition.
173.151 Oxidizer; definition.
173.151a Organic peroxide; definition.
173.152 Packing.
173.153 Limited quantities of flammable solids, oxidizers and organic peroxides.
173.154 Flammable solids and oxidizers not specifically provided for.
173.154a Fusees.
173.155 Bags, nitrate of soda, empty and unwashed.
173.156 Barium peroxide and calcium peroxide.
173.157 Benzoyl peroxide, chlorobenzoyl peroxide (para), cyclohexanone peroxide, dimethylhexane dihydroperoxide, lauroyl peroxide, or succinic acid peroxide, wet.
173.158 Benzoyl peroxide, dry; chlorobenzoyl peroxide (para) dry; cyclohexanone peroxide, dry; lauroyl peroxide, dry; or succinic acid peroxide, dry.
173.159 Burnt cotton.
173.160 Calcium chlorite and sodium chlorite.
173.161 Calcium phosphide.
173.162 Charcoal.
173.163 Chlorate of soda, chlorate of potash, and other chlorates.
173.164 Chromic acid or chromic acid mixture, dry.
173.165 Coal, ground bituminous; sea coal; coal facings.
173.166 Cobalt resinate, precipitated; calcium resinate, and calcium resinate fused.
173.167 Cotton waste, oily.
173.168 Lithium amide, powdered.
173.169 Fiber, burnt.
173.170 Fibers or fabrics impregnated, saturated or coated.
173.171 Fish scrap or fish meal.
173.172 Hair, wet.
173.173 Aluminum dross or magnesium dross.
173.174 Iron sponge, spent oxide, spent iron mass, spent iron sponge.
173.175 Lacquer base, or lacquer chips, dry.
173.176 Matches.
173.177 Motion-picture film and X-ray film.
173.178 Calcium carbide.
173.182 Nitrates.
173.183 Potassium nitrate mixed (fused) with sodium nitrite.
173.184 Nitrocellulose or collodion cotton, wet; or nitrocellulose, colloided, granular, or flake, wet; nitrostarch, wet, or nitroguanidine, wet.
173.185 Paper stock, wet.
173.186 Paper waste, wet.
173.187 Peroxide of sodium.
173.188 Phosphoric anhydride.
173.189 Phosphorus, amorphous, red.
173.190 Phosphorus, white or yellow.
173.191 Phosphorus pentachloride.
173.192 Picrate of ammonia (ammonium picrate), picric acid, trinitrobenzoic acid, and urea nitrate wet.
173.193 Picric acid, trinitrobenzoic acid, or urea nitrate, wet.
173.194 Potassium permanganate.
173.195 Pyroxylin plastic scrap.
173.197 Pyroxylin plastics, in sheets, rolls, rods, or tubes.
173.197a Smokeless powder for small arms.
173.198 Sodium hydride.
173.199 Rags, oily.
173.200 Rags, wet.
173.201 Rubber scrap, rubber buffings, reclaimed rubber, and regenerated rubber.
173.202 Sodium and potassium, metallic liquid alloy.
173.203 Tetranitromethane.
173.204 Sodium hydrosulfite.
173.205 Sodium picramate, wet.
173.206 Sodium or potassium, metallic; sodium amide; sodium potassium alloys; sodium aluminum hydride; lithium metal; lithium silicon; lithium ferro silicon; lithium hydride; lithium borohydridge; lithium aluminum hydride; lithium acetylide-ethylene diamine complex; aluminum hydride; cesium metal; rubidium metal; zirconium hydride, powdered.
173.207 Sulfide of sodium or sulfide of potassium, fused or concentrated, when ground.
173.208 Titanium metal powder, wet or dry.
173.209 Tankage, garbage, and tankage fertilizers.
173.210 Tankages, rough ammoniate.
173.211 Textile waste, wet.
173.212 Trinitrobenzene and trinitrotoluene, wet.
173.213 Wool waste, wet.
173.214 Hafnium metal or zirconium metal, wet, minimum 25 percent water by weight, mechanically produced, finer than 270 mesh particle size; hafnium metal or zirconium metal, dry, in an atmosphere of inert gas, mechanically produced, finer than 270 mesh particle size; hafnium metal or zirconium metal, wet, minimum 25 percent water by weight, chemically produced (See Note 1), finer than 20 mesh particle size; hafnium metal or zirconium metal, dry, in an atmosphere of inert gas, chemically produced (See Note 1), finer than 20 mesh particle size.
173.216 Zirconium picramate, wet.
173.217 Calcium hypochlorite compound, dry; lithium hypochlorite compound, dry; mono-(trichloro) tetra-(monopotassium dichloro)-penta-s-triazinetrione, dry; potassium dichloro-s-triazinetrione, dry; sodium dichloro-s-triazinetrione, dry; trichloro-s-triazinetrione, dry.
173.218 Isopropyl percarbonate, unstabilized.
173.219 Potassium perchlorate.
173.220 Magnesium or zirconium scrap consisting of borings, clippings, shavings, sheets, turnings, or scalpings, and magnesium metallic (other than scrap), powdered, pellets, turnings, or ribbon.
173.221 Liquid organic peroxides, n.o.s., and liquid organic peroxide solutions, n.o.s.
173.222 Acetyl peroxide and acetyl benzoyl peroxide, solution.
173.223 Peracetic acid.
173.224 Cumene hydroperoxide, dicumyl peroxide, diisopropylbenzene hydroperoxide, paramenthane hydroperoxide, and tertiary butylisopropyl benzene hydroperoxide.
173.225 Phosphorus trisulfide, phosphorus sesquisulfide, phosphorus heptasulfide, and phosphorus pentasulfide.

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173.226 Thorium metal, powdered.
172.227 Urea peroxide.
173.228 Zinc ammonium nitrite.
173.229 Chlorate and borate mixtures or chlorate and magnesium chloride mixtures.
173.230 Sodium, metallic, dispersion in organic solvent.
173.231 Calcium, metallic, crystalline.
173.232 Aluminum, metallic powder.
173.233 Nickel catalyst, finely divided, activated or spent.
173.234 Sodium nitrite and sodium nitrite mixtures.
173.235 Ammonium bichromate (ammonium dichromate).
173.236 Decaborane.
173.237 Chlorine dioxide hydrate, frozen; chloric acid.
173.238 Aircraft rocket engines (commercial) and/or aircraft rocket engine igniters (commercial).
173.239 Barium azide—50 percent or more water wet.
173.239a Ammonium perchlorate.

Subpart F—Corrosive Materials; Definition and Preparation

173.240 Corrosive material; definition.
173.241 Outage.
173.242 Bottles containing corrosive liquids.
173.243 Closing and cushioning.
173.244 Limited quantities of corrosive materials.
173.245 Corrosive liquids not specifically provided for.
173.245a Corrosive liquids n.o.s. shipped in bulk.
173.245b Corrosive solids not specifically provided for.
173.246 Antimony pentafluoride, bromine pentafluoride, iodine pentafluoride, bromine trifluoride, and chlorine trifluoride.
173.247 Acetyl bromide, acetyl chloride, acetyl iodide, antimony pentachloride, benzoyl chloride, boron trifluoride-acetic acid complex, chromyl chloride, dichloroacetyl chloride, diphenylmethyl bromide solution, pyro sulfuryl chloride, silicon chloride, sulfur chloride (mono and di), sulfuryl chloride, thionyl chloride, tin tetrachloride (anhydrous), titanium tetrachloride, and trimethyl acetyl chloride.
173.247a Vanadium tetrachloride and vanadium oxytrichloride.
173.248 Acid sludge, sludge acid, spent sulfuric acid, or spent mixed acid.
173.249 Alkaline corrosive liquids, n.o.s.; alkaline liquids, n.o.s.; alkaline corrosive battery fluid; potassium fluoride solution; potassium hydrogen fluoride solution; sodium aluminate, liquid; sodium hydroxide solution; potassium hydroxide solution; boiler — compound, liquid, solution.
173.250 Automobiles or other self-propelled vehicles, engines or other mechanical apparatus.
173.250a Benzene phosphorus dichloride and benzene phosphorus thiodichloride.
173.251 Boron trichloride and boron tribromide.
173.252 Bromine.
173.253 Chloracetyl chloride.
173.254 Chlorosulfonic acid and mixtures of chlorosulfonic acid-sulfur trioxide.
173.255 Dimethyl sulfate.
173.256 Compounds, cleaning, liquid.
173.257 Electrolyte (acid) and alkaline corrosive battery fluid.
173.258 Electrolyte, acid, or alkaline corrosive battery fluid, packed with storage batteries.
173.259 Electrolyte, acid, or alkaline corrosive battery fluid, packed with battery charger, radio current supply device, or electronic equipment and actuating devices.
173.260 Electric storage batteries, wet.
173.261 Fire-extinguisher charges.
173.262 Hydrobromic acid.
173.263 Hydrochloric (muriatic) acid, hydrochloric (muriatic) acid mixtures, hydrochloric (muriatic) acid solution, inhibited, sodium chlorite solution (not exceeding 42 percent sodium chlorite), and cleaning compounds, liquids, containing hydrochloric (muriatic) acid.
173.264 Hydrofluoric acid; white acid.
173.265 Hydrofluosilicic acid.
173.266 Hydrogen peroxide solution in water.
173.267 Mixed acid (nitric and sulfuric acid) (nitrating acid).
173.268 Nitric acid.
173.269 Perchloric acid.
173.270 Phosphorus tribromide.
173.271 Phosphorus oxybromide, phosphorus oxychloride, phosphorus trichloride, and thiophosphoryl chloride.
173.272 Sulfuric acid.
173.273 Sulfur trioxide, stabilized.
173.274 Fluosulfonic acid.
173.275 Difluorophosphoric acid, anhydrous; monofluorophosphoric acid, anhydrous; hexafluorophosphoric acid; and mixtures thereof.
173.276 Anhydrous hydrazine and hydrazine solution.
173.277 Hypochlorite solutions.
173.278 Nitrohydrochloric acid.
173.279 Anisoyl chloride.
173.280 Trichlorosilanes.
173.281 Benzyl bromide (bromotoluene, alpha).
173.282 Isopropyl percarbonate, stabilized.
173.283 Fluoboric acid.
173.286 Chemical kits.
173.287 Chromic acid solution.
173.288 Chloroformates.
173.289 Formic acid and formic acid solutions.
173.290 Mixtures of hydrofluoric and sulfuric acid.
173.291 Flame retardant compound, liquid.
173.292 Hexamethylene diamine solution.
173.293 Iodine monochloride.
173.294 Monochloroacetic acid, liquid.
173.295 Benzyl chloride.
173.296 Di iso octyl acid phosphate.
173.297 Titanium sulfate solution containing not more than 45% sulfuric acid.
173.298 Memtetrahydro phthalic anhydride.
173.299 Etching acid liquid, n.o.s.
173.299a Tris-(1-aziridinyl) phosphine oxide.

Subpart G—Compressed Gases; Definition and Preparation

173.300 Definitions.
173.301 General requirements for shipment of compressed gases in cylinders.
173.302 Charging of cylinders with nonliquefied compressed gases.
173.303 Charging of cylinders with compressed gas in solution (acetylene).
173.304 Charging of cylinders with liquefied compressed gas.
173.305 Charging of cylinders with a mixture of compressed gas and other material.
173.306 Limited quantities of compressed gases.
173.307 Exceptions for compressed gases.
173.308 Cigarette lighter or other similar device charged with fuel.
173.314 Requirements for compressed gases in tank cars.
173.315 Compressed gases in cargo tanks and portable tank containers.
173.316 Liquefied hydrogen.

Subpart H—Poisonous Materials, Etiologic Agents, and Radioactive Materials; Definitions and Preparation

173.325 Classes of poisonous materials.
173.326 Poison A.
173.327 General packaging requirements for Poison A materials.
173.328 Poison A materials not specifically provided for.
173.329 Bromacetone; chlorpicrin and methyl chloride mixtures; chlorpicrin and nonflammable, nonliquefied compressed gas mixtures.
173.330 Chemical ammunition.
173.331 Gas identification sets.
173.332 Hydrocyanic acid, liquid (prussic acid) and hyrdocyanic acid liquefied.
173.333 Phosgene or diphosgene.
173.334 Organic phosphates mixed with compressed gas.
173.336 Nitrogen dioxide, liquid; nitrogen peroxide, liquid; and nitrogen tetroxide, liquid.
173.337 Nitric oxide.
173.338 Nitrogen tetroxide-nitric oxide mixtures containing up to 33.2 percent weight nitric oxide.
173.343 Poison B.
173.344 General packaging requirements for Poison B liquids.
173.345 Limited quantities of Poison B liquids.
173.346 Poison B liquids not specifically provided for.
173.347 Aniline oil.
173.348 Arsenic acid.
173.349 Carbolic acid (phenol) liquid.
173.350 Chemical ammunition.
173.351 Hydrocyanic acid solutions.
173.352 Sodium and potassium cyanide solutions.
173.353 Methyl bromide and methyl bromide mixtures.
173.354 Motor fuel antiknock compound or tetraethyl lead.
173.355 Phenyldichlorarsine.
173.356 Thiophosgene.
173.357 Chloropicrin and chloropicrin mixtures containing no compressed gas or Poison A liquid.
173.358 Hexaethyl tetraphosphate; methyl parathion; organic phosphate compound, n.o.s.; parathion; tetraethyl dithio pyrophosphate; and tetraethyl pyrophosphate, liquid.
173.359 Hexaethyl tetraphosphate mixtures; methyl parathion mixtures; organic phosphate compound mixtures, n.o.s.; parathion mixtures; tetraethyl dithio pyrophosphate mixtures; and tetraethyl pyrophosphate mixtures; liquid, (includes solutions, emulsions, or emulsifiable liquids).
173.360 Perchloro-methyl-mercaptan.
173.361 Aldrin mixtures, liquid, with more than 60 per cent aldrin.
173.362 4-Chloro-o-toluidine hydrochloride.
173.362a Dinitrophenol solutions.
173.363 General packaging requirements for Poison B solids.
173.364 Limited quantities of Poison B solids.

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173.365 Poison B solids not specifically provided for.
173.366 Arsenic (arsenic trioxide) or arsenic acid (solid).
173.367 Arsenical compounds, n.o.s.; arsenate of lead; calcium arsenate; Paris green; and arsenical mixtures.
173.368 Arsenical dust, arsenical flue dust, and other poisonous noncombustible by-product dusts; also arsenic trioxide, calcium arsenate, and sodium arsenate.
173.369 Carbolic acid (phenol), not liquid.
173.370 Cyanides and cyanide mixtures, dry.
173.371 Dinitrobenzol (dinitrobenzene).
173.372 Mercury bichloride (mercuric chloride).
173.373 Ortho-nitroaniline and para-nitroaniline.
173.374 Nitrochlorbenzene, meta or para.
173.375 Sodium azide.
173.376 Aldrin and aldrin mixtures, dry, with more than 65 percent aldrin.
173.377 Hexaethyl tetraphosphate mixtures; methyl parathion mixtures; organic phosphate compound mixtures, n.o.s.; parathion mixtures; tetraethyl dithio pyrophosphate mixtures; and tetraethyl pyrophosphate mixtures, dry.
173.379 Cyanogen bromide.
173.381 Irritating materials; definition and general packaging requirements.
173.382 Irritating materials, not specifically provided for.
173.383 Chemical ammunition.
173.385 Tear gas grenades, tear gas candles, or similar devices.
173.386 Ethiologic agents; definition and scope.
173.387 Packaging requirements for etiologic agents.
173.388 Labeling of packages containing etiologic agents.
173.389 Radioactive materials; definitions.
173.390 Transport groups of radionuclides.
173.391 Small quantities of radioactive materials and radioactive devices.
173.392 Low specific activity radioactive material.
173.393 General packaging and shipment requirements.
173.393a U.S. Atomic Energy Commission approved packages; standard requirements and conditions.
173.393b International shipments and foreign-made packages; standard requirements and conditions.
173.394 Radioactive material in special form.
173.395 Radioactive material in normal form.
173.396 Fissile radioactive material.
173.397 Contamination control.
173.398 Special tests.

Subpart I—Special Requirements for Certain Rail Shipments or Movements

173.426 Cars, truck bodies or trailers containing lading which has been fumigated or treated with flammable liquids, flammable gases, poisonous liquids or solids, or poisonous gases.
173.432 Tank car shipments.

Subpart J—Other Regulated Material; Definition and Preparation

173.500 Definitions.
173.501 Other Regulated Material (ORM); application.
173.505 Exceptions for Other Regulated Material (ORM).
173.510 General packaging requirements.

Subpart K—Other Regulated Material; ORM–A

173.605 Ammonium hydrosulfide solution, ammonium polysulfide solution, bromochloromethane, dibromodifluoromethane, dichlorodifluoroethylene, dichloromethane, methyl chloroform, perfluoro-2-butene, tetrachloroethylene, and trichloroethylene.
173.615 Carbon dioxide, solid (dry ice).
173.620 Carbon tetrachloride, ethylene dibromide (1,2-dibromoethane), and tetrachloroethane.
173.630 Chloroform.
173.635 Ferrophosphorus.
173.645 Ferrosilicon.
173.650 Hexachloroethane.
173.655 Naphthalene or naphthalin.

Subpart L—Other Regulated Material; ORM–B

173.800 Ammonium hydrogen fluoride, ammonium hydrogen sulfate, ammonium fluoride, barium oxide, chloroplatinic acid, copper chloride, ferric chloride, lead chloride, molybdenum pentachloride, potassium hydrogen sulfate, sodium aluminate, sodium hydrogen sulfate, and sodium hydrogen sulfite, (each in solid form).
173.850 Lime, unslaked; quicklime; and calcium oxide.
173.860 Mercury, metallic.

Subpart M—Other Regulated Material; ORM–C

173.910 Ammonium sulfate nitrate.
173.915 Battery parts.
173.920 Bleaching powder.
173.925 Box toe board.
173.930 Burlap bags, used and unwashed or not cleaned.
173.931 Burlap cloth, burlap bags, new, used, and washed, or vacuum cleaned, wheel cleaned, or otherwise mechanically cleaned.
173.945 Calcium cyanamide, not hydrated.
173.948 Camphene.
173.952 Castor beans and Castor pomace.
173.955 Coconut meal pellets.
173.960 Copra.
173.965 Cotton and other fibers.
173.970 Cotton batting, batting dross, wadding, seed hull fiber, shavings, pulp, and cut linters.
173.975 Cotton sweepings; and textile, cotton, felt, or wool waste.
173.980 Excelsior.
173.985 Exothermic ferrochrome, ferromanganese, and siliconchrome.
173.990 Feed, wet, mixed.
173.995 Fish scrap and fish meal.
173.1000 Garbage tankage, rough ammoniate tankage, or tankage fertilizer.
173.1005 Hay or straw.
173.1010 Lead dross or scrap.
173.1020 Magnetized material.
173.1025 Metal borings, shavings, turnings or cuttings.
173.1030 Oakum or twisted jute packing.
173.1035 Oiled material.
173.1040 Pesticide, water-reactive.
173.1045 Petroleum coke, uncalcined.
173.1055 Rags, scrap or clothing, used.
173.1060 Rosin.
173.1065 Rubber curing compound, solid.
173.1070 Sawdust or wood shavings.
173.1075 Scrap paper or waste.
173.1080 Sulfur.
173.1085 Yeast, active (in liquid or compressed form).

Subpart N—Other Regulated Material: ORM–D

173.1200 Consumer Commodity.

APPENDIX D—Method of testing corrosion to skin.

AUTHORITY: 18 U.S.C. 834, 46 U.S.C. 170(7), 49 U.S.C. 1472(h)(1), 49 CFR 1.53(f)–(h).

10. Section 173.1 is revised to read as follows:

§ 173.1 Purpose and scope.

(a) This part defines hazardous materials for transportation purposes and prescribes certain requirements to be observed in preparing them for shipment by air, highway, rail, or water, or any combination thereof.

(b) A shipment that is not prepared for shipment in accordance with this subchapter may not be offered for transportation by air, highway, rail, or water. It is the duty of each person who offers hazardous materials for transportation to instruct each of his officers, agents, and employees having any responsibility for preparing hazardous materials for shipment as to applicable regulations in this subchapter.

11. Section 173.2 is revised to read as follows:

§ 173.2 Classification of a material having more than one hazard as defined in this part.

(a) A hazardous material, having more than one hazard as defined in this part or as specified in § 172.101 of this subchapter, must be classed according to the following order of hazards:

(1) Radioactive material.
(2) Poison A.
(3) Flammable gas.
(4) Non-flammable gas.
(5) Flammable liquid.
(6) Oxidizer.
(7) Flammable solid.
(8) Corrosive material (liquid).
(9) Poison B.
(10) Corrosive material (solid).
(11) Irritating materials.
(12) Combustible liquid (in containers having capacities exceeding 110 gallons).
(13) ORM–B.
(14) ORM–A.
(15) Combustible liquid (in containers having capacities of 110 gallons or less.)

(b) *Exceptions.* Paragraph (a) of this section does not apply to—(1) a material specifically identified in § 172.101 of this subchapter;

(2) An explosive required to be classed and approved by § 173.86.

(3) An etiologic agent identified in § 173.386 as those materials listed in 42 CFR 72.25(c); or

(4) An organic peroxide identified and classed in § 172.101 of this subchapter.

12. § 173.3 is revised to read as follows:

§ 173.3 Packaging and exceptions.

(a) The packaging of hazardous materials for transportation by air, highway, rail, or water must be as specified in this part. Methods of container manufacture, packing, and storage, that affect safety in transportation, must be open

to inspection by a duly authorized representative of the initial carrier or a representative of the Department.

(b) The regulations setting forth packaging requirements for a specific material apply to all modes of transportation unless otherwise stated, or unless exceptions from packaging requirements are authorized. For example, the restriction in § 173.249(b) applicable to cargo-only aircraft applies only to quantities in excess of those allowable under § 173.-244. Quantities covered under § 173.244 may also be shipped by cargo-only aircraft.

§§ 173.4—173.5 [Reserved]

13. §§ 173.4 and 173.5 are deleted.

14. § 173.6 is revised to read as follows:

§ 173.6 Shipments by air.

(a) *General shipping requirements.* When the regulations indicate a hazardous material is forbidden aboard cargo-only aircraft, the material is also forbidden aboard passenger-carrying aircraft.

(b) *General packaging requirements.* (1) In addition to the requirements of this part and Parts 175 and 178 of this subchapter, for air shipments each packaging must be designed and constructed to prevent leakage that may be caused by changes in altitude and temperature during air transportation.

(2) Inner containers that are breakable (such as earthenware, glass, or brittle plastic), must be packaged to prevent breakage and leakage under conditions normally incident to transportation. These completed packagings must be capable of withstanding a 4-foot drop on solid concrete in the position most likely to cause damage. Cushioning and absorbent materials must not be capable of reacting dangerously with the contents. Where any plastic packaging is specified in this part, a plastic bag or pouch is not permitted unless specifically authorized.

(3) For any packaging with a capacity of 110 gallons or less containing liquid, sufficient outage (ullage) must be provided to prevent liquid contents from completely filling the packaging at 130° F. The primary packaging (which may include composite packaging), for which retention of the liquid is the basic function, must be capable of withstanding an internal gauge pressure of no less than 11 lbs./sq. in. (0.75 kg/sq. cm.) without leakage. In addition, the primary packaging must be capable of withstanding, without leakage, an internal pressure equivalent to the sum of the absolute vapor pressure of the contents at 130° F. (55° C.) and the atmospheric pressure at sea level.

(4) Stoppers, corks, or other such friction-type closures must be held securely, tightly, and effectively in place with wire, tape, or other positive means. Each screw-type closure on any inside plastic packaging must be secured to prevent the closure from loosening due to vibration or subtantial changes in temperature.

(5) Bags permitted by the regulations as outside packaging for transportation aboard aircraft must be water resistant.

(6) For any cylinder containing hazardous materials incorporating valves, sufficient protection must be provided to prevent operation and damage to such valves during transportation, by one of the following methods:

(i) By equipping each cylinder with securely attached valve caps or protective headrings, or

(ii) By boxing or crating of the cylinder.

(7) Tank cars and tank motor vehicles containing hazardous materials may not be transported aboard aircraft.

(c) *Special labeling requirements.* See "Magnetized materials" in §§ 172.101 and 173.1020 of this subchapter and see § 172.101 for cargo-only aircraft labeling requirements.

15. In § 173.7 paragraph (b) is revised to read as follows:

§ 173.7 U.S. Government material.

* * * * *

(b) Shipments of radioactive materials, made by or under the direction or supervision of the U.S. Energy and Research and Development Administration or the Department of Defense, and which are escorted by personnel specifically designated by or under the authority of those agencies, for the purpose of national security, are not subject to the regulations in Parts 100–189 of this subchapter.

§§ 173.9—173.10 [Reserved]

16. §§ 173.9 and 173.10 are deleted.

17. Subpart B Heading is revised to read as follows:

Subpart B—Preparation of Hazardous Materials for Transportation

18. In § 173.21 paragraphs (a) and (d) are revised to read as follows:

§ 173.21 Prohibited packing.

(a) The offering of packages of hazardous materials in the same packaging, freight container, or overpack with other hazardous materials, the mixture of contents of which would be liable to cause a dangerous evolution of heat or gas or produce corrosive materials, is forbidden except as specified in §§ 173.152(a), 173.242 (a), (b), and 173.301(a).

* * * * *

(d) The offering for transportation of any package containing a cigarette lighter or other similar ignition device charged with fuel and equipped with an ignition element, or any self-lighting cigarette, is forbidden unless the design of the device and its packaging insofar as they affect safety in transportation have been:

(1) Examined and approved by the Bureau of Explosives, and

(2) A report of the results of this examination, together with the Bureau of Explosives' approval, has been sent to and acknowledged by the Office of Hazardous Materials Operations, Materials Transportation Bureau. For lighters containing flammable gas, also see § 173.308.

§ 173.22 [Amended]

19. In § 173.22 paragraph (a) is amended by changing the word "chapter" to read "subchapter."

§ 173.23 [Amended]

20. In § 173.23 paragraphs (a) and (b) are amended by changing the word "chapter" to read "subchapter."

§ 173.24 [Amended]

21. In § 173.24 the word "chapter" is changed to read "subchapter."

22. § 173.25 is revised to read as follows:

§ 173.25 Authorized packages in outside containers.

(a) Authorized packages containing no corrosive liquids may be shipped when tightly packed in a strong outside fiberboard box or drum, wooden box, barrel or crate, metal barrel or drum, or overpack, meeting the requirements of §§ 173.21 and 173.24. The outside container must be marked with the proper shipping name and labeled as required by this subchapter for each hazardous material contained therein unless markings and labels representative of each material in the outside container are visible. Packages required by the regulations in this subchapter to be marked "THIS SIDE UP" or "THIS END UP" must be packed in the outside container with their filling holes up and the outside container marked "THIS SIDE UP" or "THIS END UP" to indicate the upward position of closures. The outside container must also be marked "INSIDE PACKAGES COMPLY WITH PRESCRIBED SPECIFICATIONS" when specification packagings are required unless the specification markings on the inside packaging are visible.

(b) Authorized packages containing acids or other corrosive liquids except nitric acid, perchloric acid, or hydrogen peroxide, solution containing over 52 percent hydrogen peroxide by weight, may be shipped when tightly packed in a strong outside fiberboard or wooden box, wooden crate or overpack, meeting the requirements of §§ 173.21 and 173.24 provided such outside container shall not contain any other hazardous material except under the following conditions:

(1) * * *

(2) * * *

(3) The outside container must be marked with the proper shipping name and labeled as required by this subchapter for each hazardous material contained within unless the markings and labels representative of each material in the outside container are visible. The outside container must be marked "THIS SIDE UP" or "THIS END UP" to indicate the upward position of closures and also marked "INSIDE PACKAGES COMPLY WITH PRESCRIBED SPECIFICATIONS" when specification packagings are required unless the specification markings on the inside packagings are visible.

23. In § 173.26 paragraph (a) is amended by changing the word "chapter" to read "subchapter"; paragraph (b) is revised to read as follows:

§ 173.26 Quantity limitations.

* * * * *

(b) When quantity limitations do not appear in the packaging requirements of this subchapter, the permitted gross weight or capacity authorized for a container to be offered for transportation is as shown in the container specification. (See also § 173.27.)

24. § 173.27 is revised as follows:

§ 173.27 Aircraft quantity limitations.

(a) The maximum quantity of hazardous material that may be offered for transportation by air in a package that is required for the material by this subchapter may not exceed that quantity prescribed for the material in § 172.101 of this subchapter.

(b) When offered for transportation by air, the combined quantity of any one class of materials may not exceed the lowest maximum quantity prescribed in 172.101 of this subchapter for any one of the materials in that class contained in the same package that meets the minimum requirements for the material contained therein.

25. In § 173.28 paragraphs (a), (a)(1), (h), (h)(1)(i), and (j) are amended by changing the word "chapter" to read "subchapter"; paragraph (n) is redesignated paragraph (o); and a new paragraph (n) is added to read as follows:

§ 173.28 Reuse of containers.

* * * * *

(n) A single-trip packaging (STC) may be reused for the shipment of any corrosive solid, ORM–A, ORM–B, ORM–C, or any material not required by this subchapter to be shipped in a DOT specification packaging and paragraph (m) of this section does not apply to these materials.

* * * * *

26. In § 173.29 the Heading is revised; paragraph (g) is added to read as follows:

§ 173.29 Empty packagings, portable tanks, cargo tanks, and tank cars.

* * * * *

(g) An empty portable tank, cargo tank, tank car or multi-unit tank car tank may not be offered for transportation unless—

(i) Each opening is tightly closed and

(ii) Except as otherwise specified in this subchapter it is offered for transportation in the same manner as was required when it previously contained a greater quantity of a hazardous material. This requirement, as well as other provisions in this subchapter, does not apply to any tank that has been cleaned or purged of all hazardous materials residue or when it is reloaded with a material not subject to this subchapter.

27. § 173.30 is revised to read as follows:

§ 173.30 Loading and unloading of transport vehicles.

A person who loads or unloads hazardous materials into or from a transport vehicle or vessel shall comply with the applicable loading and unloading requirements of Parts 174, 175, 176, and 177 of this subchapter.

28. In § 173.31 paragraph (d)(9) is amended by changing the word "chapter" to read "subchapter"; paragraph (b)(5) is added to read as follows:

§ 173.31 Qualification, maintenance, and use of tank cars.

* * * * *

(b) * * *

(5) A tank car is authorized for shipment of a hazardous material by water when in conformance with the requirements of Part 176 of this subchapter and the following limitations:

(i) On carfloats or trainships if the material is permitted aboard a cargo vessel by § 172.101 of this subchapter, or

(ii) On railroad car ferry vessels if the material is permitted aboard a passenger vessel by § 172.101 of this subchapter.

* * * * *

29. In § 173.32 paragraphs (e)(1)(i), (ii), and (iii) and (e)(2)(i) are amended by changing the word "chapter" to read "subchapter"; paragraph (a)(2) is revised; paragraph (a)(4) is added to read as follows:

§ 173.32 Qualification maintenance, and use of portable tanks.

(a) * * *

(2) No portable tank offered for transportation by water may exceed a gross weight of 55,000 pounds.

* * * * *

(4) No portable tank or specification 106A or 110A tank containing a hazardous material may be offered for transportation aboard a passenger vessel unless—

(i) The vessel is operating under a change to its character of vessel certification as defined in § 171.8 of this subchapter; and

(ii) The material is permitted to be transported aboard a passenger vessel in § 172.101 of this subchapter.

* * * * *

30. In § 173.33 paragraphs (b) and (b)(1) are amended by changing the word "chapter" to read "subchapter"; the Heading is revised, and paragraph (a)(1) is added to read as follows:

§ 173.33 Qualification, maintenance, and use of cargo tanks.

(a) * * *

(1) A cargo tank is authorized for shipment of a hazardous material by water, when in conformance with the requirements of Part 176 of this subchapter and the following limitations:

(i) On carfloats or trailerships if the material is permitted aboard a cargo vessel by § 172.101 of this subchapter, or

(ii) On passenger ferry vessels or railroad car ferry vessels if the material is permitted aboard a passenger vessel by § 172.101 of this subchapter.

* * * * *

31. In § 173.34 paragraphs (a)(1), (d)(1) Note 1, (e)(9), (h), and (i)(4) are amended by changing the word "chapter" to read "subchapter"; the footnote reference is removed from the Heading; paragraph (d)(3) is revised to read as follows:

§ 173.34 Qualification, maintenance, and use of cylinders.

* * * * *

(d) * * *

(3) Safety relief devices are prohibited on cylinders charged with Poison A gas or liquid.

* * * * *

Subpart C—Explosives; Definitions and Preparation

§ 173.50 [Amended]

32. In § 173.50 the word "chapter" is changed to read "subchapter."

33. In § 173.51 paragraph (a) is revised; paragraphs (b) through (r) are redesignated paragraphs (a)(2) through (a)(17) respectively:

§ 173.51 Forbidden explosives.

(a) Unless otherwise provided in this subchapter, the offering of the following explosives for transportation is forbidden.

* * * * *

34. In § 173.52 the introductory test of paragraph (a) is revised to read as follows:

§ 173.52 Acceptable explosives.

(a) For the purposes of this subchapter, acceptable explosives are divided into three classes as follows (acceptable military explosives must be transported on board vessels in accordance with 46 CFR 146.29):

* * * * *

35. In § 173.54 paragraph (b) is revised; paragraph (c) is deleted as follows:

§ 173.54 Ammunition for cannon.

* * * * *

(b) Each outside package must be plainly marked "AMMUNITION FOR CANNON WITH EXPLOSIVE PROJECTILES," "AMMUNITION FOR CANNON WITH SMOKE PROJECTILES," "AMMUNITION FOR CANNON WITH INCENDIARY PROJECTILES," or "AMMUNITION FOR CANNON WITH ILLUMINATING PROJECTILES," as appropriate.

36. In § 173.56 paragraph (g) is revised; paragraph (i) is deleted as follows:

§ 173.56 Ammunition, projectiles, grenades, bombs, mines, gas mines, and torpedoes.

* * * * *

(g) Bombs, projectiles, grenades, ammunition for cannon with gas projectiles, or other packagings loaded with Poison A, and an explosive charge, either boxed

or unboxed (see paragraph (c) of this section) must bear the POISON GAS label in addition to the EXPLOSIVE label.

* * * * *

(i) [Deleted].

37. In § 173.57 paragraph (b) is revised; paragraph (c) is deleted as follows:

§ 173.57 Rocket ammunition.

* * * * *

(b) Each outside package must be plainly marked "ROCKET AMMUNITION WITH EXPLOSIVE PROJECTILES," "ROCKET AMMUNITION WITH GAS PROJECTILES," "ROCKET AMMUNITION WITH SMOKE PROJECTILES," "ROCKET AMMUNITION WITH INCENDIARY PROJECTILES," or "ROCKET AMMUNITION WITH ILLUMINATING PROJECTILES," as appropriate.

(c) [Deleted].

38. In § 173.58 paragraph (c) is deleted as follows:

§ 173.58 Ammunition for small arms.

* * * * *

(c) [Deleted].

39. In § 173.59 paragraph (b) is deleted as follows:

§ 173.59 Chemical ammunition, explosive.

* * * * *

(b) [Deleted].

40. § 173.60 is amended by changing the word "chapter" to read "subchapter"; paragraphs (e)(2) and (f) are deleted as follows:

§ 173.60 Black powder and low explosives.

* * * * *

(e) * * *

(2) [Deleted].

(f) [Deleted].

§ 173.61 [Amended]

41. In § 173.61 the word "chapter" is changed to read "subchapter."

42. In § 173.62 paragraph (a) is amended by changing the word "chapter" to read "subchapter"; paragraph (b) is deleted as follows:

§ 173.62 High explosives, liquid.

* * * * *

(b) [Deleted].

43. In § 173.63 paragraphs (a), (b), (c), (d), and (e) are amended by changing the word "chapter" to read "subchapter"; paragraph (g) is deleted as follows:

§ 173.63 High explosive with liquid explosive ingredient.

* * * * *

(g) [Deleted].

44. In § 173.64 paragraphs (a)(1), (2), (5), and (7) are amended by changing the word "chapter" to read "subchapter"; the Heading is revised; paragraph (c) is deleted as follows:

§ 173.64 High explosives with no liquid explosive ingredient and propellant explosives, Class A.

* * * * *

(c) [Deleted].

* * * * *

45. § 173.65 is amended by changing the word "chapter" to read "subchapter"; the introductory text of paragraph (d) is revised; paragraph (k) is deleted as follows:

§ 173.65 High explosives with no liquid explosive ingredient nor any chlorate.

* * * * *

(d) The following materials may be shipped dry, in quantities not exceeding 4 ounces in one outside package, by rail freight, or highway, as drugs, n.o.s., or medicines, n.o.s., without any other requirements when in securely closed bottles or jars cushioned to prevent breakage:

* * * * *

(k) [Deleted].

§ 173.66 [Amended]

46. § 173.66 is amended by changing the word "chapter" to read "subchapter"; Note 1 following paragraphs (d)(1), and (e)(1), and paragraph (i) are deleted.

§ 173.67 [Amended]

47. § 173.67 is amended by changing the word "chapter" to read "subchapter"; paragraph (c) is deleted.

§ 173.68 [Amended]

48. In § 173.68 paragraph (a)(1) is amended by changing the word "chapter" to read "subchapter"; paragraph (c) is deleted.

49. In § 173.69 the Heading is revised; paragraph (d) is deleted as follows:

§ 173.69 Detonating fuzes, Class A, with or without radioactive components, detonating fuze parts containing an explosive, boosters, bursters, or supplementary charges.

* * * * *

(d) [Deleted].

50. In § 173.70 paragraph (a) is revised; paragraph (e) is deleted as follows:

§ 173.70 Diazodinitrophenol or lead mononitroresorcinate.

(a) The offering of diazodinitrophenol or lead mononitroresorcinate in a dry condition for transportation is forbidden except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

* * * * *

(e) [Deleted].

51. In § 173.71 paragraph (a) is revised; paragraph (e) is deleted as follows:

§ 173.71 Fulminate of mercury.

(a) The offering of fulminate of mercury in a dry condition for transportation is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

* * * * *

(e) [Deleted].

52. In § 173.72 paragraph (a) is revised; paragraph (e) is deleted as follows:

§ 173.72 Guanyl nitrosamino guanylidene hydrazine.

(a) The offering of guanyl nitrosamino guanylidene hydrazine in a dry condition for transportation is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

* * * * *

(e) [Deleted].

53. In § 173.73 paragraph (a) is revised; paragraph (e) is deleted as follows:

§ 173.73 Lead azide.

(a) The offering of lead azide in a dry condition for transportation is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

* * * * *

(e) [Deleted].

54. In § 173.74 paragraph (a) is revised; paragraph (e) is deleted as follows:

§ 173.74 Lead styphnate.

(a) The offering of lead styphnate (lead trinitroresorcinate) in a dry condition for transportation is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

* * * * *

(e) [Deleted].

55. In § 173.75 paragraph (b)(1) is amended by changing the word "chapter" to read "subchapter"; paragraph (a) is revised; paragraph (e) is deleted as follows:

§ 173.75 Nitro mannite.

(a) The offering of nitro mannite in a dry condition for transportation is forbidden, except as a component of manufactured articles such as percussion caps, detonator, blasting caps, and exploders.

* * * * *

(e) [Deleted].

56. In § 173.76 paragraph (a) is revised; paragraph (d) is deleted as follows:

§ 173.76 Nitrosoguanidine.

(a) The offering of nitrosoguanidine in a dry condition for transportation is forbidden except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

* * * * *

(d) [Deleted].

57. In § 173.77 paragraph (a) is revised; paragraph (e) is deleted as follows:

§ 173.77 Pentaerythrite tetranitrate.

(a) The offering of pentaerythrite tetranitrate in a dry condition for transportation is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

* * * * *

(e) [Deleted].

58. In § 173.78 paragraph (a) is revised; paragraph (e) is deleted as follows:

§ 173.78 Tetrazene.

(a) The offering of tetrazene (guanyl nitrosamino guanyl tetrazene) in a dry condition for transportation is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders.

* * * * *

(e) [Deleted].

59. In § 173.79 paragraph (a)(1) is amended by changing the word "chapter" to read "subchapter"; the Heading and the introductory text of paragraph (a) are revised; paragraph (e) is deleted as follows:

§ 173.79 Jet thrust units (jato), Class A explosives; rocket motors, Class A explosives; igniters, jet thrust (jato), Class A explosives; and igniters, rocket motor, Class A explosives.

(a) Jet thrust units (jato), rocket motors, jet thrust (jato) igniters, and rocket motor igniters, which are Class A explosives must be packaged as follows:

* * * * *

(e) [Deleted].

60. In § 173.80 paragraph (a) is revised; paragraph (f) is deleted as follows:

§ 173.80 Charged oil well jet perforating guns.

(a) Charged oil well jet perforating guns may be transported only by highway and only by private carriers engaged in oil well operations. When the total weight of the explosive contents of the shaped charges assembled to guns being transported in the motor vehicle does not exceed 20 pounds, these guns may be classed as Class C explosives. See § 173.110.

* * * * *

(f) [Deleted].

§ 173.86 [Amend].

61. In § 173.86 the word "chapter" is changed to read "subchapter".

§ 173.87 [Amended].

62. In § 173.87 the word "chapter" is changed to read "subchapter".

§ 173.89 [Amended].

63. In § 173.89 paragraph (c) is deleted.

§ 173.90 [Amended].

64. In § 173.90 paragraph (c) is deleted.

§§ 173.91 & 173.92 [Amended].

65. In §§ 173.91 and 173.92 the word "chapter" is changed to read "subchapter".

66. § 172.93 is amended by changing the word "chapter" to read "subchapter"; the introductory text of paragraphs (a) and (g) and paragraph (d)(5) are revised to read as follows:

§ 173.93 Propellant explosives (solid) for cannon, small arms, rockets, guided missiles, or other devices, and propellant explosives (liquid).

(a) Propellant explosives (solid) for cannon, small arms, rockets, guided missiles, or other devices, and propellant explosives (liquid), when offered for transportation by carriers by rail freight, highway, or water, must be packed in containers complying with the following specifications (see paragraph (g)(1) of this section for shipments by cargo-only aircraft);

* * * * *

(d) * * *

(5) Propellant explosives (unstable, condemned, or deteriorated smokeless powder for cannon or small arms) may not be offered for transportation by cargo-only aircraft.

* * * * *

(g) Propellant explosives, except as provided in paragraph (d)(5) of this section, when offered for transportation by cargo-only aircraft must be packaged as follows (also authorized for transportation by carriers by rail freight, highway, or water):

* * * * *

§ 173.94 [Amended]

67. In § 173.94 paragraph (a)(1) is amended by changing the word "chapter" to read "subchapter".

68. In § 173.95 paragraph (a)(1) is amended by changing the word "chapter" to read "subchapter"; the introductory text of paragraph (a) is revised; paragraph (e) is deleted as follows:

§ 173.95 Rocket engines (liquid), Class B explosives.

(a) Rocket engines (liquid), Class B explosives must be packaged as follows:

* * * * *

(e) [Deleted].

69. In § 173.101 paragraphs (c) and (d) are revised to read as follows:

§ 173.101 Small-arms ammunition.

* * * * *

(c) Packages containing small-arms ammunition are excepted from the label prescribed in § 172.411 of this subchapter, but the outside of each package must be plainly marked "SMALL ARMS AMMUNITION."

(d) Each package containing cartridges loaded with an Irritating Material must, in addition to marking prescribed herein, be marked "IRRITATING AGENT" and must bear the IRRITANT label.

* * * * *

§ 173.103 [Amended]

70. In § 173.103 paragraph (b) is deleted.

§§ 173.104 thru 173.109 [Amended]

71. §§ 173.104 through 173.109 the word "chapter" is changed to read "subchapter".

72. In § 173.110 paragraph (b) is revised to read as follows:

§ 173.110 Charged oil well jet perforating guns, total explosive content in guns not exceeding 20 pounds per motor vehicle.

* * * * *

(b) Charged oil well jet perforating guns may be offered for transportation and transported only by private carrier by highway.

§§ 173.111 thru 173.114 [Amended]

73. §§ 173.111 through 173.114 the word "chapter" is changed to read "subchapter".

Subpart D—Flammable, Combustible, and Pyrophoric Liquids; Definitions and Preparation

§ 173.115 [Amended]

74. In § 173.115 paragraph (f) is deleted.

75. In § 173.116 paragraphs (a) and (b) are revised to read as follows:

§ 173.116 Outage.

(a) Outage for packings of flammable liquids offered for transportation, except as otherwise provided in this part, must be as prescribed in paragraphs (b) to (h) of this section.

(b) Packagings must not be completely filled. For packagings of a capacity of 110 gallons or less, sufficient outage must be provided so that the packaging will not be liquid full at 130° F. (55° C).

* * * * *

76. In § 173.118 the Heading, the introductory text of paragraph (a) and paragraph (b) are revised; paragraph (e) is deleted; a new paragraph (d) is added to read as follows:

§ 173.118 Limited quantities of flammable liquids.

(a) Limited quantities of flammable liquids that do not meet the definition of another hazard class in this subchapter and for which exceptions are permitted as noted by reference to this section in § 172.101 of this subchapter, are excepted from labeling (except when offered for transportation by air) and specification packaging requirements of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

* * * * *

(b) A flammable liquid that does not meet the definition of another hazard class and has a flash point of -73° F. or higher is not subject to the specification packaging requirements of this part when in packagings of 110 gallons or less.

The provisions of this paragraph apply only if the flash point, or an indication that its flash point is 73° F. or higher, is marked on the outside package.

* * * * *

(d) Special exceptions for shipment of certain flammable liquids in the ORM–D class are provided in Subpart N of this part.

(e) [Deleted].

77. § 173.118a is added to read as follows:

§ 173.118a Exceptions for combustible liquids.

(a) Unless otherwise stated for a specific material, the regulations in this subchapter do not apply to a material classed as a combustible liquid in a packaging having a rated capacity of 110 gallons or less.

(b) A combustible liquid in a portable tank, cargo tank or tank car is not subject to the requirements of this subchapter except those that pertain to:

(1) Shipping papers, waybills, switching orders, or other billing;

(2) Marking and placarding of portable tank;

(3) Placarding of tank car tanks and motor vehicles;

(4) Carriage aboard aircraft and vessels; and

(5) Reporting incidents as prescribed in §§ 171.15 and 171.16 of this subchapter.

78. In § 173.119 the word "chapter" is changed to read "subchapter"; paragraphs (a), (a)(1), (a)(3), (b), (b)(7), (i), (k)(3), the introductory text of (m), (m)(1), (m)(5), and (m)(8) are revised to read as follows:

§ 173.119 Flammable liquids not specifically provided for.

(a) *Flammable liquids with flash point 20°F. or below.* Flammable liquids with flash point 20° F. or below and having vapor pressure (Reid [1] test) not over 16 pounds per square inch, absolute, at 100° F., other than those for which special requirements are prescribed in this part, must be prepared for shipment in specification containers of a design and constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein, as follows (see paragraphs (c) to (i) of this section for high pressure liquids, paragraphs (j) to (l) of this section for viscous liquids, and paragraph (m) of this section for flammable liquids which are also oxidizers, corrosive liquids, poison B liquids, or organic peroxides and § 173.134 for flammable liquids that are also pyrophoric liquids):

(1) Specification 1A, 1C, or 1D (§§ 178.1, 178.3, 178.4 of this subchapter). Glass carboys, boxed or in barrels or kegs, capacity not over 5 gallons, except capacity not over 6.5 gallons, authorized for Spec. 1D. Not authorized for transportation by air.

* * * * *

(3) Specification 17E (§ 178.116 of this subchapter). Metal drums (single-trip) with openings not over 2.3 inches in diameter. Drums with a marked capacity of more than 5 gallons but not more than 30 gallons must be constructed of 19-gauge body and head sheets. Drums with a marked capacity in excess of 30 gallons must be constructed of 18-gauge body and head sheets. Drums with a marked capacity of more than 5 gallons are not authorized for transportation by air.

* * * * *

(b) *Flammable liquids with flash points above 20° F. to 73° F.* Flammable liquids with flash points above 20° F. to 73° F. and having vapor pressure (Reid [1] test) not over 16 pounds per square inch, absolute, at 100° F. other than those for which special requirements are prescribed in this part, must be packaged in packagings of a design and constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein as follows (see paragraphs (c) through (i) of this section for high-pressure liquids and paragraph (m) of this section for flammable liquids which are also oxidizers, poison B liquids, organic peroxides or corrosive liquids):

* * * * *

(7) Specification 37P (§ 178.133 of this subchapter). Steel drums with polyethylene liner (nonreusable container). Authorized only for materials that will not react with polyethylene and result in container failure. Not authorized for transportation by air.

* * * * *

(i) *Bung label.* A flammable liquid as described in paragraph (e) or (f) of this section, shipped in a metal drum or barrel, in addition to the FLAMMABLE LIQUID label, must be labeled near the bung with a white rectangular label or tag measuring 5 by 3 inches, bearing the wording as displayed below:

(Label remains the same.)

* * * * *

(k) * * *

(3) Specification 37A or 37B (§ 178.131, 178.132 of this subchapter). Metal drums (single-trip) not over 5 gallons with welded side seams. Not authorized for transportation by air.

* * * * *

(m) *Flammable liquids which are also organic peroxides, oxidizers, corrosive liquids or poison B liquids.* A flammable liquid which is also an organic peroxide, oxidizer, corrosive liquid, or poison B liquid must be packed as follows:

(1) Specification 1A, 1D, or 1EX single-trip) (§ 178.1, 178.4, 178.6 of this subchapter). Glass carboys, boxed or in plywood drums, capacity not over 5 gallons for specification 1A. Not authorized for transportation by air.

* * * * *

(5) Specification 37P (§ 178.133 of this subchapter). Steel drums, not over 5 gallons capacity, with polyethylene liner (non-reusable container). Drums exceeding 1 gallon capacity must be constructed of at least 24-gauge metal. Authorized only for materials that will not react with polyethylene and result in container failure. Not authorized for transportation by air.

* * * * *

(8) Specification 12P (§ 178.211 of this subchapter). Fiberboard boxes with inside specification 2U (§ 178.24 of this subchapter) polyethylene containers not over 5 gallons capacity each. Authorized only for material which will not react dangerously with or cause decomposition of polyethylene. Not authorized for transportation by air.

* * * * *

79. In § 173.120 paragraphs (a) and (c) are revised; paragraph (d) is added to read as follows:

§ 173.120 Automobiles, motorcycles, tractors, or other self-propelled vehicles.

(a) Automobiles, motorcycles, tractors, or other self-propelled vehicles, equipped with flammable liquid fuel tanks, provided these tanks are securely closed, are not subject to any other requirements for transportation by rail or highway. For transportation by air see paragraph (d) of this section.

* * * * *

(c) *Truck bodies or trailers on flat cars.* Truck bodies or trailers with automatic heating or refrigerating equipment of the flammable liquid type may be shipped with fuel tanks filled and equipment operating or inoperating, when used for the transportation of other freight and loaded on flat cars as part of a joint rail-highway movement, provided the equipment and fuel supply are of a type approved by the Bureau of Explosives. The heating or refrigerating units are not subject to any other requirements of this subchapter and are considered as carriers' equipment, not as shipments.

(d) Except as provided in § 175.305 of this subchapter, each automobile, motorcycle, tractor, or other self-propelled vehicle, powered by an internal combustion engine fueled by a flammable or combustible liquid, when offered for transportation by air, must have the fuel tank drained of all fuel and have the tank opening tightly closed.

§ 173.121 [Amended]

80. In § 173.121 the word "chapter" is changed to read "subchapter"; paragraph (b) is deleted.

81. In § 173.122 the word "chapter" is changed to read "subchapter"; the introductory text of paragraph (a) and paragraph (a)(3) are revised to read as follows:

§ 173.122 Acrolein, inhibited.

(a) Acrolein must be inhibited when shipped, and when offered for transportation must be packaged as follows:

* * * * *

(3) Specification 105A300W (§§ 179.100, 179.101 of this subchapter) tank car.

[1] ASTM Test D323.

[1] ASTM Test D323.

(i) Each tank car must be stenciled DOT–105A200W, and must be equipped with the 150 psig safety relief valve required by that specification.

(ii) Each tank car must be marked "ACROLEIN" in accordance with the requirements of § 172.330 of this subchapter.

* * * * *

82. In § 173.123 the word "chapter" is changed to read "subchapter"; paragraph (c) is added to read as follows:

§ 173.123 Ethyl chloride.

* * * * *

(c) Maximum quantity in one package for cargo-only aircraft is limited to 300 pounds in cylinders and 15 pounds in other packagings.

83. § 173.124 is amended by changing the word "chapter" to read "subchapter"; paragraphs (a)(5)(i) and (b) are added to read as follows:

§ 173.124 Ethylene oxide.

(a) * * *

(5) * * *

(i) Each tank car must be marked "ETHYLENE OXIDE" in accordance with the requirements of § 172.330 of this subchapter.

* * * * *

(b) The maximum quantity in one package for cargo-only aircraft is limited to 300 pounds in cylinders and 15 pounds in other packagings.

84. In § 173.125 paragraphs (a)(5) and (6) are amended by changing the word "chapter" to read "subchapter"; the Heading, the introductory text of paragraph (a) and paragraph (a)(7) are revised; paragraphs (a)(3) and (4) are deleted as follows:

§ 173.125 Alcohol, n.o.s. (flammable liquid).

(a) Except as otherwise provided in this Part, alcohol, n.o.s., which is classed as a flammable liquid must be packaged as follows:

* * * * *

(3) [Deleted].

(4) [Deleted].

* * * * *

(7) Specification 12P (§ 178.211 of this subchapter). Fiberboard box with inside Specification 2U (§ 178.24 of this subchapter) polyethylene container not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures. Not authorized for transportation by air.

§ 173.126 [Amended]

85. In § 173.126 paragraph (b) is deleted.

§ 173.127 [Amended]

86. In § 173.127 the word "chapter" is changed to read "subchapter".

87. In § 173.128 the Heading, the introductory text of paragraph (a) and paragraphs (a)(2), (a)(3), (a)(4), and (c) are revised; paragraph (c)(1) is deleted as follows:

§ 173.128 Paints and related materials (flammable liquids).

(a) Except as otherwise provided in this Part, a flammable liquid which is a paint, enamel, lacquer, stain, shellac, varnish, liquid aluminum, liquid bronze, liquid gold, liquid wood filler, liquid lacquer base or a thinning, reducing, or removing compound therefor, or a liquid drier therefor, must be packaged as follows:

* * * * *

(2) Specification 37A or 37B (§ 178.131, § 178.132 of this subchapter). Metal drums (single-trip) not over 5 gallons capacity, with welded side seams for drums over 2 gallons capacity, irrespective of flash point or viscosity. Specification 37A metal drums constructed with 26-gauge body sheets, 24-gauge removable heads, and 26-gauge bottom heads are authorized for not over 80 pounds gross weight. Not authorized for transportation by air.

(3) Specifications 52,[1] or 57 (§§ 178.251, 178.253 of this subchapter). Metal portable tank. Not authorized for transportation by water.

(4) Specification 37C (§ 178.135 of this subchapter). Metal drums (non-reusable containers) not over 5 gallons capacity each. Authorized only for materials having flash point above 20° F. Not authorized for transportation by air.

* * * * *

(c) The flammable liquids identified in paragraph (a) of this section, in glass packagings of not over 1 quart capacity each, or in metal packagings of not over 5 gallons capacity each, further overpacked in a strong outside packaging are excepted from the specification packaging requirements of this Part.

(1) [Deleted].

88. In § 73.129 the Heading, the introductory text of paragraph (a), paragraphs (a)(2) and (b) are revised to read as follows:

§ 173.129 Polishes (flammable liquids).

(a) Except as otherwise provided in this Part, a flammable liquid which is a metal, stove, furniture, or wood polish must be packaged as follows:

* * * * *

(2) Specification 37A or 37B (§§ 178.131, 178.132 of this subchapter). Metal (single-trip) not over 5 gallons capacity with welded side seams, irrespective of flash point or viscosity. Not authorized for transportation by air.

(b) Liquid metal, stove, furniture, and wood polish, in glass packagings not over 1 quart capacity each, or metal packagings not over 5 gallons each, further overpacked in a stong outside packaging is excepted from the specification packaging requirements of this part.

[1] Use of existing tanks authorized. Construction not authorized after May 31, 1972.

89. § 173.130 is revised to read as follows:

§ 173.130 Refrigerating machines.

Refrigerating machines assembled for shipment and containing 15 pounds or less of a flammable liquid for their operation are excepted from labeling and the specification packaging requirements of this subchapter (except when offered for transportation by air). In addition, shipments for transportation by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter except § 177.817.

90. In § 173.132 the Heading, the introductory text of paragraph (a), paragraphs (a)(2), (a)(3), and (b) are revised to read as follows:

§ 173.132 Cement liquid, n.o.s.; container cement; linoleum cement; pyroxylin cement; rubber cement; tile cement; wallboard cement; coating solution (flammable liquids).

(a) Except as otherwise provided in this part, a flammable liquid which is a liquid cement, n.o.s. container cement, linoleum cement, pyroxylin cement, rubber cement, tile cement, wallboard cement, or coating solution must be packaged as follows:

* * * * *

(2) Specification 52,[1] or 57 (§§ 178.251, 178.153 of this subchapter). Metal portable tank. Authorized for materials irrespective of flash point but only those defined as viscous liquids. Not authorized for transportation by water.

(3) Specification 37C (§ 178.135 of this subchapter). Metal drums (non-reusable container) not over 5 gallons capacity each. Authorized only for materials having flash point above 20° F. Not authorized for transportation by air.

(b) The cements identified in paragraph (a) of this section, except any cement containing carbon bisulfide, in glass or leakproof packagings consisting of a fiberboard body and metal tops and bottoms of not over 1 quart capacity each, or metal packagings of not over 5 gallons capacity each, further overpacked in a strong outside packaging are excepted from the specification packagings requirements of this part.

§ 173.133 [Amended]

91. In § 173.133 the word "chapter" is changed to read "subchapter"; Note 1 following (a)(1) is deleted.

§ 173.134 [Amended]

92. In § 173.134 the word "chapter" is changed to read "subchapter".

93. In § 173.135 the word "chapter" is changed to read "subchapter"; the Heading, the introductory text of paragraph (a), and paragraph (a)(5) are revised to read as follows:

[1] Use of existing tanks authorized. Construction not authorized after May 31, 1972.

§ 173.135 Diethyl dichlorosilane, dimethyl dichlorosilane, ethyl dichlorosilane, ethyl trichlorosilane, methyl trichlorosilane, trimethyl chlorosilane, and vinyl trichlorosilane.

(a) Diethyl dichlorosilane, dimethyl dichlorosilane, ethyl dichlorosilane, ethyl trichlorosilane, methyl trichlorosilane, trimethyl chlorosilane, and vinyl trichlorosilane must be packaged as follows:

* * * * *

(5) Specifications 5, 5B, 5C, and 17E (single-trip) (§§ 178.80, 178.82, 178.83, 178.116 of this subchapter). Metal drums. Not authorized for shipment by air.

* * * * *

94. In § 173.136 the word "chapter" is changed to read "subchapter"; paragraphs (a)(3) and (a)(4) are revised to read as follows:

§ 173.136 Methyl dichlorosilane and trichlorosilane.

(a) * * *

(3) Specification 5A, 5B, or 5C (§§ 178.81, 178.82, 178.83 of this subchapter). Metal drums not over 55 gallons capacity each. Specification 5B drums must have no opening exceeding 2.3 inches in diameter. Not authorized for shipment by air.

(4) Specification 5F (§ 178.85 of this subchapter). Metal drums not over 11 gallons capacity. Not authorized for shipment by air.

* * * * *

§ 173.137 [Amended]

95. In § 173.137 the word "chapter" is changed to read "subchapter".

§ 173.138 [Amended]

96. In § 173.138 paragraph (b) is deleted.

97. In § 173.139 the word "chapter" is changed to read "subchapter"; paragraph (a)(4)(i) is added to read as follows:

§ 173.139 Ethylene imine, inhibited, and propylene imine, inhibited.

(a) * * *

(4) * * *

(i) Each tank car must be marked "ETHYLENE IMINE" in accordance with the requirements of § 172.330 of this subchapter.

* * * * *

§§ 173.140 & 173.141 [Amended]

98. In §§ 173.140 and 173.141 the word "chapter" is changed to read "subchapter".

§ 173.143 [Amended]

99. In § 173.143 paragraphs (a) (1) and (2) are amended by changing the word "chapter" to read "subchapter"; paragraph (b) is deleted.

100. In § 173.144 paragraph (a)(2) is amended by changing the word "chapter" to read "subchapter"; the Heading, the introductory text of paragraph (a), and paragraphs (a)(3) and (b) are revised to read as follows:

§ 173.144 Ink (flammable liquid).

(a) Except as otherwise provided in this part, ink which is classed as a flammable liquid in this subchapter must be packaged as follows:

* * * * *

(3) Specification 37C (§ 178.135 of this subchapter). Metal drums (non-reusable container) not over 5 gallons capacity each. Authorized only for material having flash point over 20° F. Not authorized for transportation by air.

(b) Ink in glass packagings not over 1 quart capacity each, or in metal packagings not over 5 gallons capacity each, further overpacked in a strong outide packaging is excepted from the specification packaging requirements of this part.

101. In § 173.145 the word "chapter" is changed to read "subchapter"; the section; the Heading and paragraph (a)(1) are revised to read as follows:

§ 173.145 Dimethylhydrazine, unsymmetrical, and methyl hydrazine.

(a) * * *

(1) Specification 1D (§ 178.4 of this subchapter). Boxed glass carboys. Not authorized for transportation by air.

* * * * *

102. In § 173.146 the Heading and paragraph (b) are revised to read as follows:

§ 173.146 Heaters for refrigerator cars, flammable liquid fuel type.

* * * * *

(b) Heaters of the liquid fuel type for refrigerator cars must have their flammable liquid fuel tanks completely drained if offered for transportation or transported in less-than-carload or less-than-truckload lots.

103. In § 173.147 paragraph (b) is revised to read as follows:

§ 173.147 Methyl vinyl ketone, inhibited.

* * * * *

(b) Inhibited methyl vinyl ketone, in a glass or metal inside container having a capacity of no more than 4 fluid ounces with no more than one such container securely closed and efficiently cushioned in a strong outside packaging, is excepted from labeling and the specification packaging requirements of this subpart (except that labeling is required for transportation by air). In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

§§ 173.148–173.149 [Amended]

104. In §§ 173.148 and 173.149 the word "chapter" is changed to read "subchapter".

105. § 173.149a is added to read as follows:

§ 173.149a Nitromethane.

Nitromethane must be packaged as specified in § 173.119(b) except that shipment in cargo tanks, tank cars portable tanks, and any container having a capacity greater than 110 gallons is forbidden.

106. Subpart E Heading is revised to read as follows:

Subpart E—Flammable Solids, Oxidizers, and Organic Peroxides; Definitions and Preparation

107. § 173.150 is revised to read as follows:

§ 173.150 Flammable solid; definition.

For the purpose of this subchapter, "Flammable solid" is any solid material, other than one classed as an explosive, which, under conditions normally incident to transportation is liable to cause fires through friction, retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious transportation hazard. Included in this class are spontaneously combustible and water-reactive material.

108. § 173.151 is revised to read as follows:

§ 173.151 Oxidizer; definition.

An oxidizer for the purpose of this subchapter is a substance such as a chlorate, permanganate, inorganic peroxide, nitro carbo nitrate, or a nitrate, that yields oxygen readily to stimulate the combustion of organic matter.

109. § 173.151a is added to read as follows:

§ 173.151a Organic peroxide; definition.

An organic compound containing the bivalent -0-0- structure and which may be considered a derivative of hydrogen peroxide where one or more of the hydrogen atoms have been replaced by organic radicals must be classed as an organic peroxide.

110. § 173.153 is revised to read as follows:

§ 173.153 Limited quantities of flammable solids, oxidizers and organic peroxides.

(a) Limited quantities of flammable solids for which exceptions are permitted as noted by reference to this section in § 172.101 of this subchapter, are excepted from labeling (except when offered for transportation by air) and specification packaging requirements when packed according to the following paragraph. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

(1) In inside containers not over 1 pound net weight each, in outside containers not exceeding 25 pounds net weight each.

(b) Limited quantities of oxidizers and organic peroxides for which exceptions are permitted as noted by reference to this section in § 172.101 of this subchapter are excepted from labeling (except when offered for transportation by air)

and specification packaging requirements when packed according to the following paragraphs. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

(1) Oxidizers in inside containers not over 1 pound net weight each, in outside containers not exceeding 25 pounds net weight each.

(2) Organic peroxides, except acetyl benzoyl peroxide and benzoyl peroxide, as follows:

(i) In inside containers which must be securely packed and cushioned with noncombustible cushioning material (except that cushioning material is not required when the liquid is contained in strong, securely closed plastic packagings of not over 1 ounce by volume capacity each), further overpacked in strong outside packagings containing not over 1 pint or 1 pound net weight of the material.

(ii) In not more than 24 inside fiberboard containers each having not more than 70 securely closed tubes having a maximum fluid capacity each of ⅛-ounce and securely packed in non-combustible cushioning material.

(c) Special exceptions for shipment of certain flammable solids, oxidizers and organic peroxides in the ORM–D Class are provided in Subpart N of this part.

111. § 173.154 is amended by changing the word "chapter" to read "subchapter"; the Heading and the introductory text of paragraph (a) are revised to read as follows:

§ 173.154 Flammable solids and oxidizers not specifically provided for.

(a) Flammable solids and oxidizers as defined in §§ 173.150 and 173.151, other than those for which special packing requirements are prescribed, must be packed in specification containers of a design and constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein. Specific packaging requirements are as follows:

* * * * *

§§ 173.154a–173.156 and 173.158 [Amended]

112. In §§ 173.154a, 173.155, 173.156, and 173.158 the word "chapter" is amended to read "subchapter."

113. § 173.159 is revised to read as follows:

§ 173.159 Burnt cotton.

(a) "Burnt cotton" is cotton that has been on fire and from which the burnt portions have not been removed by repicking. It must not be offered for transportation until at least 10 days have elapsed since the last evidence of fire in it.

(b) When burnt cotton is picked and baled, the separated unburnt cotton is subject to the same regulations as cotton that has not been involved in a fire. See § 172.101 of this subchapter.

§§ 173.160–173.161 [Amended]

114. In §§ 173.160 and 173.161 the word "chapter" is changed to read "subchapter."

115. In § 173.162 the introductory text of paragraph (a) and paragraph (a)(9) are revised; the word "chapter" is changed to read "subchapter" in paragraph (i); paragraph (a)(11) is added; paragraph (f)(4) is deleted as follows:

§ 173.162 Charcoal.

(a) Charcoal, as described in this paragraph, is expected from labeling (except when offered for transportation by air) and specification packaging requirements of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments highway are not subject to Part 177 of this subchapter, except § 177.817.

* * * * *

(9) When offered for transportation by air, charcoal must be packaged in boxes or barrels.

* * * * *

(11) Special exceptions for shipment of charcoal in the ORM–D class are provided in Subpart N of this part.

(4) [Deleted]

* * * * *

§ 173.163 [Amended]

116. In § 173.163 the word "chapter" is changed to read "subchapter."

117. § 173.164 is amended by changing the word "chapter" to read "subchapter"; the Heading and introductory text of paragraph (a) and paragraph (a)(2) are revised to read as follows:

§ 173.164 Chromic acid or chromic acid mixture, dry.

(a) Chromic acid and chromic acid mixture, dry, must be packaged as follows:

* * * * *

(2) Specifications 17H or 37A (§§ 178.118, 178.131 of this subchapter) metal drums. A specification 37A metal drum constructed from 22-gauge steel throughout is authorized for a gross weight of 490 pounds or less when it is shipped in a carload or truckload lot.

* * * * *

§ 173.166 [Amended]

118. 173.166 the word "chapter" is changed to read "subchapter."

§ 173.167 [Amended]

119. In § 173.167 paragraph (b) is deleted.

§ 173.168 [Amended]

120. In § 173.168 the word "chapter" is changed to read "subchapter".

§ 173.169 [Amended]

121. In § 173.169 paragraph (b) is deleted.

§ 173.170 Fibers or fabrics impregnated, saturated or coated.

122. In § 173.170 the Heading is revised; paragraph (b) is deleted.

§ 173.171 [Amended]

123. In § 173.171 paragraph (b) is deleted.

§ 173.172 [Amended]

124. In § 173.172 paragraph (b) is deleted.

§ 173.174 Iron sponge, spent oxide, spent iron mass, spent iron sponge.

125. In § 173.174 the Heading is revised; paragraphs (b) and (d) are deleted as follows:

§ 173.175 [Amended]

126. In § 173.175 the word "chapter" is changed to read "subchapter".

127. § 173.176 is amended by changing the word "chapter" to read "subchapter"; the introductory text of paragraph (d) is revised; paragraph (e), Note 1, and (g)(1) are deleted: paragraph (h) is added to read as follows:

§ 173.176 Matches.

* * * * *

(d) Matches, unless exempted in paragraph (g) or (h) of this section, must be packaged as follows:

* * * * *

(e) [Deleted].

NOTE 1: [Deleted].

* * * * *

(g) * * *

(1) [Deleted].

(h) Matches, strike-on-box, book, and card when packaged in outside fiberboard or wooden boxes may be packed in the same outside packaging with nonflammable materials. They must be compactly packed in tightly closed inside packagings or securely wrapped to prevent accidental ignition. When so packed, they are excepted from labeling (except when offered for transportation by air) and specification packaging requirements of this subchapter. The outside of each package must be marked "BOOK MATCHES," "STRIKE-ON-BOX MATCHES," or "CARD MATCHES," as appropriate. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

128. § 173.177 is amended by changing the word "chapter" to read "subchapter"; the Note following paragraph (a)(4) is deleted; paragraphs (a) and (b) are revised to read as follows:

§ 173.177 Motion-picture film and X-ray film.

(a) Motion-picture film and X-ray film (nitrocellulose base) must be packed in specification containers as follows:

* * * * *

(4) * * *

NOTE: [Deleted].

* * * * *

(b) Slow burning motion-picture film is excepted from the requirements of this subchapter, except when packed with flammable film.

129. § 173.178 is revised to read as follows:

§ 173.178 Calcium carbide.

(a) Calcium carbide must be packed as follows:

(1) In water-tight metal drums with rolled, folded top and bottom seams and with welded side seams. Closures must be of the friction-type or screw-type. Full open-top closures must be gasketed and equipped with leverlock or bolted clamping ring. Maximum rated capacity may not exceed 55 gallons.

(2) In water-tight, sift-proof, bulk metal containers.

(3) In water-tight, sift-proof, closed-top metal covered hopper rail cars.

(4) In water-tight, sift-proof, closed-top metal covered hopper motor vehicles.

§ 173.179 [Reserved]

130. § 173.179 is deleted.

§ 173.180 [Amended]

131. § 173.180 is amended by changing the word "chapter" to read "subchapter" each time it appears in the section; paragraph (b) is deleted.

132. In § 173.182 paragraph (b) (3) is deleted; paragraphs (a), (b), (b) (1), (2), (4), and (5) through (7) and paragraph (c) are revised to read as follows:

§ 173.182 Nitrates.

(a) Aluminum nitrate, ammonium nitrate (no organic coating), ammonium nitrate (organic coating), ammonium nitrate-carbonate mixture, ammonium nitrate-phosphate, ammonium nitrate fertilizer,[1] (containing no more than 0.2 percent carbon), ammonium nitrate mixed fertilizer, barium nitrate, calcium nitrate (NOTE: The double salt of calcium and ammonium nitrate ($5Ca(NO_3)_2NH_4NO_3 \cdot 10H_2O$) containing not more than 15.5 percent nitrogen and at least 12 percent water is not subject to the regulations in this subchapter), guanidine nitrate, lead nitrate, magnesium nitrate, nitrates, n.o.s., nitrate of soda and potash, nitro carbo nitrate (see Note 1), potassium nitrate, silver nitrate, sodium nitrate, and strontium nitrate must be packaged as follows:

(1) In wooden or fiberboard boxes with glass, metal, or other strong inside containers; in metal or fiber drums; in kegs or barrels; or in strong metal cans. When so packed, they are excepted from the specification packaging requirements of this Part.

(b) Aluminum nitrate, ammonium nitrate (no organic coating), ammonium nitrate-carbonate mixture, ammonium nitrate-phosphate, ammonium nitrate fertilizer[1] (containing no more than 0.2 percent carbon) ammonium nitrate mixed fertilizer, barium nitrate, calcium nitrate, guanidine nitrate, nitrate of soda and potash, potassium nitrate, sodium nitrate, and strontium nitrate, in addition to containers prescribed in paragraph (a) of this section, may be packaged as follows:

(1) In bulk, in tightly closed freight cars.

(2) In bulk, in sift-proof closed or open type motor vehicles.

(3) [Deleted].

(4) In burlap bags not exceeding 200 pounds net weight, water-resistant, made tight against sifting, and made of not less than 7½-ounce burlap.

(5) Multiple-wall paper bags must be constructed as follows:

(i) At least 4-ply including moisture-barrier ply, and made tight against sifting. Maximum authorized net weight is 110 pounds. Completed package, filled to weight with product and closed for shipment, must be capable of withstanding three 4-foot drops on face or back onto solid concrete without rupture.

(ii) At least 3-plies of extensible kraft paper having a minimum total basis weight of 180 pounds including an innermost ply coated with polyethylene to provide a moisture barrier. Maximum authorized net weight is 80 pounds. Completed package, filled to weight with product and closed for shipment, must be capable of withstanding three 4-foot drops on face or back onto solid concrete without rupture.

(6) Plastic bags must be constructed as follows:

(i) Specification 44P (§ 178.241 of this subchapter). All plastic bags. Maximum authorized net weight is 81 pounds. Authorized only for ammonium nitrate mixed fertilizer, and ammonium nitrate fertilizer (containing no more than 0.2 percent carbon).

(ii) Polypropylene bag made of 9 denier polypropylene fibers spun continuously to form a sheet weighing at least 3½ ounces per square yard. Maximum authorized net weight is 100 pounds. Each bag must have an inner liner of polyethylene not less than 4 mils thick. Each bag filled to weight with product and closed for shipment must be capable of withstanding three 4-foot drops on face or back onto solid concrete without rupture. Authorized only for ammonium nitrate (no organic coating) and ammonium nitrate fertilizer; or

(iii) Polyethylene bag made of two plies of high-density polyethylene film laminated together so that the orientation of each ply of film is at right angles to the other. Maximum authorized net weight is 100 pounds. For a net weight not exceeding 50 pounds, the thickness of each bag must be at least 2.5 mils. For a net weight exceeding 50 pounds but not exceeding 100 pounds, the thickness of each bag must be at least 4 mils. Each bag must be capable of withstanding the test requirements of § 178.241–4 and each bag must be in compliance with the requirements of § 178.241–3 of this subchapter for bag closures. Authorized only for ammonium nitrate (no organic coating), ammonium nitrate fertilizer, and sodium nitrate.

(7) Specification 53[1] or 56 (§§ 178.251, 178.252 of this subchapter). Portable tank. Authorized only for sodium nitrate.

(c) Nitro carbo nitrate, in addition to the packagings prescribed in paragraph (a) of this section, may be packaged as follows:

(1) Burlap bags, water-resistant, made tight against sifting and made of not less than 7½-ounce burlap. Maximum authorized net weight is 100 pounds.

(2) In multi-wall paper bags of at least 4-ply construction including moisture-barrier ply, and made tight against sifting. Maximum authorized net weight is 100 pounds. Completed package, filled to weight with product and closed as for shipment, must be capable of withstanding three 4-foot drops on the face or back onto solid concrete without rupture.

§§ 173.183—173.184 [Amended]

133. In §§ 173.183 and 173.184 the word "chapter" is changed to read "subchapter".

134. In § 173.185 paragraph (b) is deleted as follows:

§ 173.185 Paper stock, wet.

* * * * *

(b) [Deleted]

135. In § 173.186, Note 1 following paragraph (a) and paragraph (b) are deleted as follows:

§ 173.186 Paper waste, wet.

(a) * * *

NOTE 1: [Deleted]

(b) [Deleted]

§ 173.187 [Amended]

136. In § 173.187 the word "chapter" is changed to read "subchapter".

137. § 173.188 is amended by changing the word "chapter" to read "subchapter"; Note 1 following paragraph (a) (1) is deleted as follows:

§ 173.188 Phosphoric anhydride.

(a) * * *

(1) * * *

NOTE 1: [Deleted]

* * * * *

§ 173.189 [Amended]

138. In § 173.189 the word "chapter" is changed to read "subchapter".

139. § 173.190 is amended by changing the word "chapter" to read "subchapter"; paragraph (a) and the introductory text of paragraph (c) are revised; the last sentence of paragraph (b) (3) is amended; paragraph (b) (3) (i) is added preceding Note 1, and paragraph (e) is deleted as follows:

§ 173.190 Phosphorus, white or yellow.

(a) Phosphorus, white or yellow, when offered for transportation by rail freight, highway, or water, must be packed in water or dry.

(b) * * *

(3) * * * After unloading, the tank must be filled to its entire capacity with an inert gas or to its entire capacity and the dome to not more than 50 percent of its capacity with water having a temperature not exceeding 140° F. and placarded with "EMPTY—FLAMMABLE" placards as described in §§ 172.525

[1] Applies only to materials tested in accordance with and meeting the definition in The Fertilizer Institute's publication "Definition and Test Procedures for Ammonium Nitrate Fertilizer" dated May 7, 1971.

[1] Use of existing tanks authorized. Construction not authorized after May 31, 1972.

and 172.527 of this subchapter before the car is offered for return movement.

(i) Each tank car must be marked "PHOSPHORUS" in accordance with the requirements of § 172.330 of this subchapter.

* * * * *

(c) Phosphorus, white or yellow, when offered for transportation by air must be packed in water in packaging as follows (also authorized for transportation by rail freight, highway or water):

* * * * *

(e) [Deleted].

140. In §§ 173.191, 173.192, and 173.193 the word "chapter" is changed to read "subchapter".

141. In § 173.194 paragraph (a)(2) is revised to read as follows:

§ 173.194 Potassium permanganate.

(a) * * *

(2) In bulk, in sift-proof, self-clearing, covered hopper or bottom outlet steel cars or in sift-proof all steel flat bottom gondola cars with fixed sides and ends equipped with water-proof and dust-proof wooden or steel covers well secured in place for all openings, or in bulk, in motor vehicles with steel, sift-proof, self-clearing hopper-type or dump-type bodies, with water-proof and dust-proof covers, well secured in place. Such cars, when used exclusively in this service and stencilled "FOR POTASSIUM PERMANGANATE ONLY," are not subject to the requirements of § 174.515 of this subchapter.

142. § 173.195 is amended by changing the word "chapter" to read "subchapter"; the Heading and the introductory text of paragraph (a) are revised; paragraph (a)(4) is deleted as follows:

§ 173.195 Pyroxylin plastic scrap.

(a) Pyroxylin plastic scrap must be packaged as follows:

* * * * *

(4) [Deleted]

* * * * *

§ 173.196 [Reserved]

143. § 173.196 is deleted.

144. § 173.197 is amended by changing the word "chapter" to read "subchapter"; the introductory text of paragraph (a) is revised to read as follows:

§ 173.197 Pyroxylin plastics, in sheets, rolls, rods, or tubes.

(a) Pyroxylin plastics, in sheets, rolls, rods, or tubes containing nitrocellulose are subject to this subchapter only when offered for transportation by air or water and then must be packaged as follows:

* * * * *

§§ 173.197a and 173.198 [Amended]

145. In §§ 173.197a, and 173.198 the word "chapter" is changed to read "subchapter".

146. In § 173.199 paragraph (b) is deleted as follows:

§ 173.199 Rags, oily.

* * * * *

(b) [Deleted].

147. In § 173.200, paragraph (b) is deleted as follows:

§ 173.200 Rags, wet.

* * * * *

(b) [Deleted].

§§ 173.201—173.203 [Amended]

148. In §§ 173.201, 173.202 and 173.203 the word "chapter" is changed to read "subchapter".

149. § 173.204 is amended by changing the word "chapter" to read "subchapter"; paragraph (a)(4) is revised; Note 1 following paragraph (a)(8) is deleted as follows:

§ 173.204 Sodium hydrosulfite.

(a) * * *

(4) Specification 37A or 37B (§§ 178.131, 178.132 of this subchapter). Metal drums (STC). Not authorized for transportation by air or water.

* * * * *

(8) * * *

Note 1: [Deleted]

§ 173.205 [Amended]

150. In § 173.205 the word "chapter" is changed to read "subchapter".

151. § 173.206 is amended by changing the word "chapter" to read "subchapter"; the heading, the introductory text of paragraph (a), paragraphs (a)(2), (d), and (e) are revised to read as follows:

§ 173.206 Sodium or potassium, metallic; sodium amide; sodium potassium alloys; sodium aluminum hydride; lithium metal; lithium silicon; lithium ferro silicon; lithium hydride; lithium borohydride; lithium aluminum hydride; lithium acetylide-ethylene diamine complex; aluminum hydride; cesium metal; rubidium metal; zirconium hydride, powdered.

(a) Metallic sodium or potassium, sodium amide, sodium potassium alloys, sodium aluminum hydride, lithium metal, lithium silicon, lithium ferro silicon, lithium hydride, lithium borohydride, lithium aluminum hydride, lithium acetylide-ethylene diamine complex, aluminum hydride, cesium metal, rubidium metal, and powdered zirconium hydride must be packaged as follows:

* * * * *

(2) Specification 5, 6A, 6B, or 6C (§§ 178.80, 178.97, 178.98, 178.99 of this subchapter). Metal barrels or drums. Not authorized for lithium aluminum hydride or aluminum hydride.

* * * * *

(d) Lithium metal in cartridges or rubidium metal in cartridges is excepted from labeling and (except when offered for transportation by air) and specification packaging requirements, when packaged and described as follows:

(1) In inside hermetically sealed metal cartridges not exceeding 18 grams net weight each, packed in strong outside packagings with net weight of lithium or rubidium metal not exceeding one pound; which outside packagings may be further overpacked in strong wooden boxes or fiber drums, provided total net weight of lithium or rubidium metal in one outside box or drum does not exceed one pound.

(e) Lithium metal or rubidium metal in cartridges, containing more than 18 grams but not more than 120 grams of lithium or rubidium, must be packed in specification packagings as follows:

(1) Specification 15A or 15B (§§ 178.168, 178.169 of this subchapter). Wooden boxes, not over 75 pounds gross weight, with air-tight inside copper cartridges. Cartridges having less than 0.022-inch wall thickness must be separated or securely cushioned in the boxes. Each cartridge must have a minimum wall thickness of 0.02-inch.

§§ 173.207—173.208 [Amended]

152. In §§ 173.207 and 173.208 the word "chapter" is changed to read "subchapter".

153. In §§ 173.209, 173.210, and 173.211, paragraph (b) is deleted as follows:

§ 173.209 Tankage, garbage, and tankage fertilizers.

* * * * *

(b) [Deleted].

§ 173.210 Tankages rough ammoniate.

* * * * *

(b) [Deleted].

§ 173.211 Textile waste, wet.

* * * * *

(b) [Deleted].

154. In § 173.213, paragraph (b) is deleted as follows:

§ 173.213 Wool waste, wet.

* * * * *

(b) [Deleted].

§§ 173.214 and 173.216 [Amended]

155. In §§ 173.214 and 173.216 the word "chapter" is changed to read "subchapter".

156. § 173.217 is amended by changing the word "chapter" to read "subchapter"; the heading and the introductory text of paragraph (a) and paragraph (b) are revised to read as follows:

§ 173.217 Calcium hydrochlorite compound, dry; lithium hypochlorite compound, dry; mono-(trichloro) tetra - (monopotassium dichloro) - penta-s-triazinetrione, dry; potassium dichloro-s-triazinetrione, dry; sodium dichloro-s-triazinetrione, dry; trichloro-s-triazinetrione, dry.

(a) Calcium hypochlorite compound, dry, lithium hypochlorite compound, dry, mono-(trichloro) tetra-(monopotassium dichloro) - penta-s-triazinetrione, dry, potassium dichloro-s-triazinetrione, dry, sodium dichloro-s-triazinetrione, dry, and trichloro-s-triazinetrione, dry, each containing more than 39 percent available chlorine must be packaged as follows:

* * * * *

(b) Strong outside wooden or fiberboard packages with inside packagings of glass not over five pounds capacity each, or with inside metal packagings or plastic bottles not over ten pounds capacity each, are excepted from labeling and (except labeling is required for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

§§ 173.218—173.219 [Amended]

157. In §§ 173.218 and 173.219 the word "chapter" is changed to read "subchapter".

158. In § 173.220 paragraphs (a)(2) and (b)(1) are revised to read as follows:

§ 173.220 Magnesium or zirconium scrap consisting of borings, clippings, shavings, sheets, turnings, or scalpings, and magnesium metallic (other than scrap), powdered, pellets, turnings, or ribbon.

(a) * * *

(2) Magnesium or zirconium scrap consisting of clippings, scalpings, or scrap sheets in closed metal drums, wooden barrels, or wooden boxes, unless otherwise provided, is excepted from labeling (except when offered for transportation by air) and specification packaging requirements of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

(b) * * *

(1) Magnesium metallic (other than scrap), pellets, turnings, or ribbon in fiberboard boxes with inside glass bottles not over 1 pound capacity each, with not more than 25 pounds net weight of product in each outside fiberboard box, in closed metal drums, metal pails, fiber drums, or wooden boxes with inside packagings are, unless otherwise provided, excepted from labeling (except labeling is required for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

§§ 173.221—173.222 [Amended]

159. In § 173.221 and 173.222 the word "chapter" is changed to read "subchapter".

160. In § 173.223 paragraph (b) is revised to read as follows:

§ 173.223 Peracetic acid.

* * * * *

(b) Peracetic acid solutions not exceeding 40 percent strength packed in strong wooden or fiberboard boxes, with not more than one inside glass packaging not exceeding 1 pint capacity, cushioned with sterile absorbent cotton or other cushioning material which will not react with the contents to generate heat, and with such cushioning material in sufficient quantity to completely absorb the contents of the bottle, are excepted from labeling (except labeling is required for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

§ 173.224 [Amended]

161. In § 173.224 the word "chapter" is changed to read "subchapter".

162. § 173.225 is amended by changing the word "chapter" to read "subchapter"; the heading and introductory text of paragraph (a) are revised to read as follows:

§ 173.225 Phosphorus trisulfide; phosphorus sesquisulfide; phosphorus heptasulfide; phosphorus pentasulfide.

(a) Phosphorus trisulfide, phosphorus sesquisulfide, and phosphorus heptasulfide must be packaged as follows:

* * * * *

163. § 173.226 paragraph (a)(1) is amended by changing the word "chapter" to read "subchapter;" the introductory text of paragraph (b) is revised to read as follows:

§ 173.226 Thorium metal, powdered.

* * * * *

(b) Thorium metal powder packed in tightly and securely closed metal cans, cushioned with incombustible material in strong outside wooden or fiberboard boxes, and not exceeding 4 ounces net weight in one outside packaging, is excepted from labeling (except labeling is required for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

§§ 173.227—173.228 [Amended]

164. In §§ 173.227, 173.228 the word "chapter" is changed to read "subchapter".

165. § 173.229 paragraph (b)(5) is amended by changing the word "chapter" to read "subchapter;" the introductory text of paragraph (b) is revised to read as follows:

§ 173.229 Chlorate and borate mixtures or chlorate and magnesium chloride mixtures.

* * * * *

(b) Chlorate and borate mixtures or chlorate and magnesium chloride mixtures containing no other hazardous additives and containing less than 50 percent chlorate are excepted from labeling (except labeling is required for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

* * * * *

§§ 173.230—173.231 [Amended]

166. In §§ 173.230 and 173.231 the word "chapter" is changed to read "subchapter".

167. § 173.232 is revised to read as follows:

§ 173.232 Aluminum, metallic powder.

(a) Polished aluminum powder which has been treated with oil or waxes for printing or paint purposes is not subject to the requirements of this subchapter.

(b) Metallic aluminum powder, other than the powder described in paragraph (a) of this section in earthenware, glass, metal, or plastic inside packagings of not more than 5 pounds capacity each, in strong outside packaging of not over 25 pounds net weight, is excepted from labeling (except that labeling is required for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

(c) Metallic aluminum powder, other than the powder described in paragraph (a) of this section, when not packed in accordance with paragraph (b) of this section, must be packaged as follows:

(1) Steel barrel or drum, not over 500 pounds gross weight.

(2) Wooden barrel or keg, not over 350 pounds gross weight.

(3) Wooden box, not over 125 pounds gross weight.

(4) Moisture and sift-proof bag, not over 55 pounds weight.

(5) Fiber drum, not over 450 pounds gross weight.

(6) Fiberboard box, not over 75 pounds gross weight.

§§ 173.233—173.236 [Amended]

168. In §§ 173.233, 173.234, 173.235, and 173.236 the word "chapter" is changed to read "subchapter".

169. § 173.237 is revised to read as follows:

§ 173.237 Chlorine dioxide hydrate, frozen; chloric acid.

(a) Chlorine dioxide hydrate, frozen, and chloric acid must be packed in specification packaging as follows:

(1) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes, with inside packages of polyethylene or other suitable material. Fiberboard boxes must be reinforced and insulated and sufficient dry ice must be used to maintain the hydrate or acid in a frozen state during transportation. Shipments are authorized for transportation by private or contract carrier by motor vehicle only.

(2) Containers and means of refrigeration providing equal efficiency, when approved by the Bureau of Explosives, are authorized for shipments by private carrier by motor vehicle.

170. § 173.238 paragraph (a)(1) is amended by changing the word "chap-

ter" to read "subchapter"; the introductory text of paragraph (a) is revised to read as follows:

§ 173.238 Aircraft rocket engines (commercial) and/or aircraft rocket engine igniters (commercial).

(a) Aircraft rocket engines (commercial) and their igniters may be offered for transportation when of a type approved by the Bureau of Explosives to be so described and classed, and when packaged as follows:

* * * * *

§§ 173.239–173.239a [Amended]

171. In §§ 173.239 and 173.239a the word "chapter" is changed to read "subchapter".

172. In § 173.240 the heading is revised; the introductory text of paragraph (a) is amended by changing the word "chapter" to read "subchapter"; paragraphs (a)(1) and (2) are revised to read as follows:

§ 173.240 Corrosive material; definition.

(a) For the purpose of this subchapter, a corrosive material is a liquid or solid that causes visible destruction or irreversible alterations in human skin tissue at the site of contact, or in the case of leakage from its packaging, a liquid that has a severe corrosion rate on steel.

(1) A material is considered to be destructive or to cause irreversible alteration in human skin tissue if when tested on the intact skin of the albino rabbit by the technique described in Appendix A to this part, the structure of the tissue at the site of contact is destroyed or changed irreversibly after an exposure period of 4 hours or less.

* * * * *

(2) A liquid is considered to have a severe corrosion rate if its corrosion rate exceeds 0.250 inch per year (IPY) on steel (SAE 1020) at a test temperature of 130° F. An acceptable test is described in NACE Standard TM–01–69.

* * * * *

173. In § 173.241, the introductory text of paragraph (a), paragraphs (a)(1) and (a)(2) are revised to read as follows:

§ 173.241 Outage.

(a) The outage (ullage) for packagings containing corrosive liquids, when offered for transportation, must be in accordance with the following requirements:

(1) *General outage requirements.* Packagings must not be completely filled. The proper vacant space (outage) in a tank car or other shipping container depends on the coefficient of expansion of the liquid and the maximum increase of temperature to which it will be subjected in transit. Outage must be calculated to the total capacity of the container.

(2) *Outage requirements for packagings of 110 gallons or less.* Sufficient outage must be provided so that the packaging will not be liquid full at 130° F. (55° C.).

* * * * *

174. In § 173.242 paragraph (c) is revised to read as follows:

§ 173.242 Bottles containing corrosive liquids.

* * * * *

(c) Corrosive liquid solutions in securely closed bottles, in quantities necessary for preparing photographic processing mixtures and efficiently cushioned, may be packed in the same outside shipping container with required amounts of packaged dry chemicals not classed as hazardous materials by these regulations, provided no dangerous reaction would occur should the contents of bottles be mixed with the dry chemicals. Marking prescribed in Part 172 of this subchapter is not required.

175. In §173.244 the heading and paragraphs (a) and (b) are revised to read as follows:

§ 173.244 Limited quantities of corrosive materials.

(a) Limited quantities of corrosive materials for which exceptions are permitted as noted by reference to this section in § 172.101 of this subchapter are excepted from labeling (except when offered for transportation by air) and specification packaging requirements when packed according to the following paragraphs. In addition shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter except § 177.817.

(1) Corrosive liquids in bottles having a rated capacity not over 16 ounces by volume each enclosed in a metal can packed in strong outside packaging.

(2) Corrosive liquids in metal or plastic containers having a rated capacity not over 16 ounces by volume in strong outside packaging.

(3) Corrosive solids in earthenware, glass, plastic, or paper containers of not more than 5 pounds capacity each packed in metal, wooden or fiberboard outside packaging not exceeding 25 pounds net weight each.

(4) Corrosive solids in metal, rigid fiber or composition cans or cartons or rigid plastic containers; of not more than 10 pounds capacity each, overpacked in metal, wooden or fiberboard outside containers not exceeding 25 pounds net weight each.

(b) Special exceptions for shipment of certain corrosive materials in the ORM–D class are provided in Subpart N of this Part.

176. § 173.245 is amended by changing the word "chapter" to read "subchapter"; paragraphs (a) (1), (3), (17), (19), (20), (21), (22), and paragraph (b) are revised to read as follows:

§ 173.245 Corrosive liquids not specifically provided for.

(a) * * *

(1) Specification 1A, 1B, 1C, or 1E (§§ 178.1, 178.2, 178.3, 178.7 of this subchapter). Glass carboys in boxes, kegs, or plywood drums. Not authorized for transportation by air.

* * * * *

(3) Specification 1D (§ 178.4 of this subchapter). Boxed glass carboys of not over 6.5 gallons nominal capacity which must be closed, and when reused must be reconditioned and tested, as provided in the specification; means must be provided so that accumulated pressure in bottles may not exceed 10 pounds per square inch gauge at 130°F(55°C), or will vent at a pressure not to exceed 10 pounds per square inch gauge. Not authorized for transportation by air.

* * * * *

(17) Specification 17H, 37A, or 37B (§§ 178.118, 178.131, or 178.132 of this subchapter), metal drums (single-trip), with welded side seams, not over 5 gallons capacity each. Drums must be lined throughout with a pliable plastic material impervious to the lading. Specification 37A and 37B metal drums must be at least 24 gauge steel. Not authorized for transportation by air.

* * * * *

(19) Specification 37P (§ 178.133 of this subchapter). Steel drum with polyethylene liner (non-reusable container). Authorized only for materials that will not react with polyethylene and result in container failure. Not authorized for transportation by air.

(20) Specification 16D (§ 178.187 of this subchapter). Wirebound wooden overwrap, with inside specification 2T, 2TL, 2S, or 2SL (§§ 178.21, 178.27, 178.35, 178.35a of this subchapter) polyethylene container. Not authorized for transportation by air.

(21) Specification 12P (§ 178.211 of this subchapter). Fiberboard boxes with inside specification 2U (§ 178.24 of this subchapter) polyethylene containers not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures. Not authorized for transportation by air.

(22) Specification 16A (§ 178.185 of this subchapter). Wirebound wooden box (§ 178.185–22 of this subchapter) with inside specification 2U (§ 178.24 of this subchapter) polyethylene container. The polyethylene container must be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads. Not authorized for transportation by air.

* * * * *

(b) Except when transportation by aircraft or vessel is involved, a material classed as a corrosive material that is corrosive only to steel and does not meet the definition of any other hazard class defined in this subchapter, is not subject to the requirements of this subchapter for rail or highway when transported in a portable tank, cargo tank, or tank car constructed of materials that will not react dangerously with or be degraded by the material being transported.

§ 173.246 [Amended]

177. In § 173.246 the word "chapter" is changed to read "subchapter".

178. § 173.247 is amended by changing the word "chapter" to read "subchapter"; the Heading, paragraphs (a)(3) and (a)(16) are revised to read as follows:

§ 173.247 Acetyl bromide, acetyl chloride, acetyl iodide, antimony pentachloride, benzoyl chloride, boron trifluoride-acetic acid complex, chromyl chloride, dichloroacetyl chloride, diphenylmethyl bromide solution, pyro sulfuryl chloride, silicon chloride, sulfur chloride (mono and di), sulfuryl chloride, thionyl chloride, tin tetrachloride (anhydrous), titanium tetrachloride, and trimethyl acetyl chloride.

(a) • • •

(3) Specification 1A, 1C, 1D, 1E, or 1K (§§ 178.1, 178.3, 178.4, 178.7, 178.14 of this subchapter). Glass carboys in boxes, kegs or plywood drums (not permitted for antimony pentachloride or tin tetrachloride, anhydrous). Not authorized for transportation by air.

• • • • •

(16) Specification 106A500X or 110A500W (§§ 179.300, 179.301) tanks. Authorized only for antimony pentachloride and titanium tetrachloride (anhydrous). Tanks containing titanium tetrachloride (anhydrous) must not be equipped with safety devices. (See § 177.834(m) of this subchapter for special requirements for highway shipments.)

• • • • •

§ 173.247a [Amended]

179. In § 173.247a the word "chapter" is changed to read "subchapter".

180. § 173.248 is amended by changing the word "chapter" to read "subchapter"; the introductory text of paragraph (a) and paragraph (a)(1) are revised to read as follows:

§ 173.248 Acid sludge, sludge acid, spent sulfuric acid, or spent mixed acid.

(a) Acid sludge, sludge acid, spent sulfuric acid, or spent mixed acid, resulting from the use of sulfuric acid in various processes, not containing hydrofluoric acid, must be packaged as follows:

(1) Specification 1A, 1D, or 1E (§§ 178.1, 178.4, 178.7 of this subchapter). Carboys in boxes or plywood drums. Authorized only for spent sulfuric acid. Not authorized for transportation by air.

• • • • •

181. § 173.249 is amended by changing the word "chapter" to read "subchapter"; the Heading, paragraphs (a)(3), (b)(1), (c), and the introductory text of paragraph (b) are revised; paragraph (a)(9) is deleted; and paragaph (d) is added to read as follows:

§ 173.249 Alkaline corrosive liquids, n.o.s.; alkaline liquids, n.o.s.; alkaline corrosive battery fluid: potassium fluride solution; potassium hydrogen floride solution; sodium aluminate liquid; sodium hydroxide solution; potassium hydroxide solution, boiler compound, liquid; solution.

(a) • • •

(3) Specification 5 (§ 178.80 of this subchapter) metal drums. Openings must not exceed 2.3 inches in diameter.

• • • • •

(9) [Deleted].

• • • • •

(b) Alkaline corrosive liquids, n.o.s., alkaline liquids, n.o.s., alkaline corrosive battery fluids, and liquid sodium aluminate, when offered for transportation by cargo-only aircraft, must be packaged as follows (also authorized for transportation by rail freight, highway, or water):

(1) In packagings as prescribed in paragraphs (a)(8), (10), and (11) of this section and § 173.245(a)(7) and (12).

• • • • •

(c) Alkaline corrosive liquids, n.o.s., alkaline liquids, n.o.s., alkaline corrosive battery fluids, and liquid sodium aluminate in inside packagings of not more than 8 fluid ounces capacity each, packed in strong outside packagings, and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in the event of breakage, are excepted from labeling (except labeling is required for transportation by air) and specification packaging requirements of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

(d) Special exceptions for shipment of certain alkaline in the ORM–D class are provided in Subpart N of this part.

182. In § 173.250 paragraph (a) is revised to read as follows:

§ 173.250 Automobiles, other self-propelled vehicles, engines or other mechanical apparatus.

(a) Automobiles and other self-propelled vehicles equipped with electric storage batteries, wet, and electric storage batteries, wet when included in carload or truckload shipments of automobile parts or assembled material in accordance with paragraphs (a) (1) and (3) of this section are excepted from any other requirements of this subchapter unless other hazardous materials are being transported on the vehicle. In this case, the regulations covering these other materials apply.

(1) When batteries are removed from automobiles and loaded into car or motor vehicle therewith, the batteries must be so loaded, blocked, and braced in car as to prevent movement therein during transit, and the load must be so arranged that loose articles cannot come into contact with the batteries.

(2) When wet batteries or batteries shipped dry in the same container with electrolyte (acid) are shipped with automobile parts or assembly material, the batteries must be boxed or crated and so loaded, blocked, and braced in the car or motor vehicle as to prevent movement therein during transit, and the load must be so arranged that loose articles cannot come in contact with the batteries.

(3) When batteries are installed in the vehicle, they must be completely protected so that short circuits will be prevented and so secured that leakage of acid will not occur under conditions normal to transportation.

• • • • •

§ 173.251 [Amended]

183. In § 173.251 the word "chapter" is changed to read "subchapter".

184. § 173.252 is amended by changing the word "chapter" to read "subchapter"; paragraph (a)(3)(ii) is added; paragraphs (g) (2) and (3) are revised to read as follows:

§ 173.252 Bromine.

(a) • • •

(3) • • •

(ii) Each tank car must be marked "BROMINE" in accordance with the requirements of § 172.330 of this subchapter.

• • • • •

(g) • • •

(2) Specification 12A (§ 178.210 of this subchapter). Fiberboard boxes, constructed of at least 275 pound test (Mullen or Cady) double-wall corrugated fiberboard having not more than six inside glass bottles of not over 1 quart capacity. Each inside glass bottle must be surrounded by a sheet of polyethylene foam at least 7/16 inch thick (see Note 1), and approximately the same height as the bottle, and must also be separated by partitions made of corrugated fiberboard at least 275-pound test (Mullen or Cady). The box must be provided with inside top and bottom pads of polyethylene foam at least 1⅛ inches thick (see Note 1). Shipper must have established that the completed package closed as for shipment, with inside packagings filled with liquid of same specific gravity as bromine, is capable of withstanding tests prescribed by § 178.210–10 of this subchapter. Not authorized for transportation by air.

(NOTE 1: remains the same)

(3) Specification 12A (§ 178.210 of this subchapter). Fiberboard box with inside glass bottles having a capacity not exceeding one quart with closures meeting the requirements of paragraph (d) of this section. Each bottle must be enclosed in a tinplate slipcover metal can surrounded by non-combustible cushioning material. Each box may not contain more than four bottles with each having a capacity not exceeding 1 quart or 12 bottles with each having a capacity not exceeding 8 fluid ounces. The shipper must have established that the completed package closed for shipment, with inside bottles filled with a liquid of the same specific gravity and similar viscosity as bromine, is capable of withstanding the tests prescribed in § 178.210–10 of this subchapter. Not authorized for transportation by air.

185. § 173.253 is amended by changing the word "chapter" to read "subchapter"; paragraph (a)(4) is deleted as follows:

§ 173.253 Chloroacetyl chloride.

(a) • • •

(4) [Deleted].

• • • • •

§§ 173.254—173.255 [Amended]

186. In §§ 173.254 and 173.255 the word "chapter" is changed to read "subchapter".

187. § 173.256 is amended by changing the word "chapter" to read "subchapter"; paragraph (a)(4) is revised to read as follows:

§ 173.256 Compounds, cleaning, liquid.

(a) * * *

(4) Specification 16A (§ 178.185 of this subchapter). Wirebound wooden box (§ 178.185–22 of this subchapter) with inside specification 2U (§ 178.24 of this subchapter) polyethylene container. The polyethylene container must be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads. Not authorized for transportation by air.

* * * * *

188. § 173.257 is amended by changing the word "chapter" to read "subchapter"; the heading, the introductory text of paragraph (a) and paragraphs (a)(8) and (12) are revised to read as follows:

§ 173.257 Electrolyte (acid) and alkaline corrosive battery fluid.

(a) Electrolyte (acid) may not be over 47 percent strength (39° Baume). Electrolyte or alkaline corrosive battery fluid must be packaged as follows (packaging utilizing a bag to contain the electrolyte or battery fluid is not authorized for transportation by air):

* * * * *

(8) Specification 1EX (§ 178.6 of this subchapter). Carboys in plywood drums. Not authorized for transportation by air.

* * * * *

(12) Specification 37P (§ 178.133 of this subchapter). Steel drums with polyethylene liner (non-reusable container). Not authorized for transportation by air.

* * * * *

189. § 173.258 is amended by changing the word "chapter" to read "subchapter"; paragraph (a)(3) is revised to read as follows:

§ 173.258 Electrolyte, acid, or alkaline corrosive battery fluid, packed with storage batteries.

(a) * * *

(3) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes with not more than 12 inside packagings of polyethylene or other material resistant to the lading, not over 64-ounce capacity each. Polyethylene packagings that are not rigid or semi-rigid in nature must be contained in other strong inside packagings; minimum thickness of polyethylene or other plastic material may be not less than 0.003-inch for any film sheet for multi-wall packagings or not less than 0.006-inch for single-wall packagings. Inside packagings must be adequately separated from the storage battery. Authorized gross weight not over 56 pounds. (See § 178.205–33 of this subchapter.) Not authorized for transportation by air.

§ 173.259 [Amended]

190. In § 173.259 the word "chapter" is changed to read "subchapter".

191. § 173.260 is amended by changing the word "chapter" to read "subchapter"; paragraphs (e)(1) and (e)(2) are deleted, and paragraphs (e)(2)(i), (ii), (iii), and (iv), (2), (3), and (4) are redesignated (e)(1), (2), (3), and (4); paragraphs (d), (f) and (e) are revised to read as follows:

§ 173.260 Electric storage batteries, wet.

* * * * *

(d) Electric storage batteries, containing electrolyte or corrosive battery fluid, of the nonspillable type, must be protected against short circuits, and if completely and securely boxed are not subject to any other requirements of this subchapter.

(e) Electric storage batteries containing electrolyte or corrosive battery fluid are not subject to the requirements of this subchapter for carriage by highway if:

(1) No other hazardous materials are transported in the same vehicle,

(2) The batteries are loaded or braced so as to prevent damage and short circuits in transit,

(3) Any other material loaded in the same vehicle is blocked, braced, or otherwise secured to prevent contact with or damage to the batteries, and

(4) The transport vehicle is carrying no material shipped by any person other than the shipper of the batteries.

* * * * *

(f) Electric storage batteries containing electrolyte or corrosive battery fluid, other than those of the nonspillable type, when shipped in less-than-carload and less-than-truckload lots, must be marked and labeled as prescribed in Part 172 of this subchapter.

* * * * *

192. § 173.261 is amended by changing the word "chapter" to read "subchapter"; the introductory text of paragraph (b) is revised to read as follows:

§ 173.261 Fire-extinguisher charges.

* * * * *

(b) Fire-extinguisher charges as described in paragraphs (b)(1) through (3) of this section are excepted from labeling (except labeling is required for transportation by air) and the specification packaging requirements. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

* * * * *

193. § 173.262 is amended by changing the word "chapter" to read "subchapter"; paragraphs (a)(1) and (8) are revised to read as follows:

§ 173.262 Hydrobromic acid.

(a) * * *

(1) Specification 1A, 1C, 1D, or 1E (§§ 178.1, 178.3, 178.4, 178.7 of this subchapter). Carboys in boxes, kegs, or plywood drums. Not authorized for transportation by air.

* * * * *

(8) Specification 37P (§ 178.133 of this subchapter). Steel drum, not over 5 gallons capacity, with polyethylene liner (non-reusable container). A drum exceeding 1 gallon capacity must be constructed of at least 24 gauge metal. Not authorized for transportation by air.

* * * * *

194. § 173.263 is amended by changing the word "chapter" to read "subchapter"; Note 1 following paragraph (a)(9) is deleted; paragraphs (a)(5), (7), (14), (18), (23), (24), and (b)(2) are revised to read as follows:

§ 173.263 Hydrochloric (muriatic) acid; hydrochloric (muriatic) acid mixtures; hydrochloric (muriatic) acid solution, inhibited; sodium chlorite solution (not exceeding 42 percent sodium chlorite); and cleaning compounds, liquids, containing hydrochloric (muriatic) acid.

(a) * * *

(5) Specification 1A, 1C, or 1K (§ 178.1, 178.3, 178.14 of this subchapter). Carboys in boxes or kegs. Not authorized for transportation by air.

* * * * *

(7) Specification 1D, 1E, or 1EX (single-trip) (§§ 178.4, 178.6, 178.7 of this subchapter). Glass carboys in boxes or plywood drums, of not over 6.5 gallon nominal capacity. Means must be provided so that accumulated total pressure in bottle may not exceed 10 p.s.i.g. at 130° F. (55° C.) or will vent at a pressure not to exceed 10 p.s.i.g. Not authorized for transportation by air.

* * * * *

NOTE 1: [Deleted]

* * * * *

(14) Specifications 17H, 37A, or 37B (§§ 178.118, 178.131, 178.132, of this subchapter). Metal drums (single-trip) not over 5 gallons capacity each. Authorized only for 15 percent or less, inhibited hydrochloric (muriatic) acid solution. Drums must be lined throughout with a pliable plastic material impervious to the solution. Specifications 37A and 37B metal drums must be at least 24 gauge steel. Not authorized for transportation by air.

* * * * *

(18) Specification 37p (§ 178.133 of this subchapter). Steel drums constructed of at least 24-gauge metal for drums exceeding 1 gallon capacity, with polyethylene liner (nonreusable container). Not authorized for transportation by air.

* * * * *

(23) Specification 12p (§ 178.211 of this subchapter). Fiberboard boxes with inside specification 2U (§ 178.24 of this subchapter) polyethylene containers not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when poly-

ethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures. Not authorized for transportation by air.

(24) Specification 16A (§ 178.185 of this subchapter). Wirebound wooden box (§ 178.185–22 of this subchapter) with inside specification 2U (§ 178.24 of this subchapter) polyethylene container. The polyethylene container must be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads. Not authorized for transportation by air.

* * * * *

(b) * * *

(2) Inside packaging of not more than 8 fluid ounces capacity each, packed in strong outside packagings, and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in the event of breakage, are excepted from labeling (except labeling is required for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

* * * * *

195. § 173.264 is amended by changing the word "chapter" to read "subchapter"; Note 4 following paragraph (a)(7) and paragraph (b)(5) are deleted; Note 1 following paragraph (a)(8) is redesignated paragraph (a)(8)(i), a new paragraph (a)(8)(ii) is added; paragraph (i) is added following paragraph (b)(2); Note 3 following paragraph (a)(10), paragraphs (a)(8) and (b)(6) are revised to read as follows:

§ 173.264 Hydrofluoric acid; White acid.

(a) * * *

(7) * * *

NOTE 4 [Deleted]

* * * * *

(8) Specification 103A,[1] 103W, 105A100, 105A100W, 111A100F2, 111A100W2, 111A100W4, or ARA–IV[1] (§§ 179.100, 179.101, 179.200, 179.201 of this subchapter). Unlined metal tanks which have been subjected to adequate passivity or neutralization process. (See Note 1 to paragraph (a)(7) of this section.) Authorized only for hydrofluoric acid of 60 to 80 percent strength. If tanks are washed out with water they must be resubjected to passivity before reshipment.

(i) Hydrofluoric acid solutions and concentrations of 60 percent up to 65 percent when shipped in unlined metal tank cars must be inhibited so that the corrosive effect on steel must not be greater than that of hydrofluoric acid of 65 percent concentration.

(ii) Each tank car must be marked "HYDROFLUORIC ACID" in accordance with the requirements of § 172.330 of this subchapter.

[1] Use of existing tank cars authorized, but new construction not authorized.

(10) * * *

NOTE 3: Drums must be lined with material at least as thick as the sample material tested.

(b) * * *

(2) * * *

(i) Each tank car must be marked "HYDROGEN FLUORIDE" in accordance with the requirements of § 172.330 of this subchapter.

(5) [Deleted]

(6) Specification 106A500X or 110A-500W (§§ 179.300, 179.301 of this subchapter) tanks. Tanks may not be equipped with safety devices of any type and valves must be protected by metal caps. Tanks may not be filled to a density in excess of 85 percent of the water weight capacity of the tank. (See § 177.834(m) of this subchapter for special requirements for highway shipments.)

196. § 173.265 is amended by changing the word "chapter" to read "subchapter"; paragraphs (a)(4), (c)(1) and (d)(4) are revised to read as follows:

§ 173.265 Hydrofluosilicic acid.

(a) * * *

(4) Specification 16A (§ 178.185 of this subchapter). Wirebound wooden box (§ 178.185–22 of this subchapter) with inside specification 2U (§ 178.24 of this subchapter) polyethylene container. The polyethylene container must be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads. Not authorized for transportation by air.

* * * * *

(c) * * *

(1) Specification 1A, 1C, 1D, or 1E (§§ 178.1, 178.3, 178.4, 178.7 of this subchapter). Carboys in boxes, in kegs, or plywood drums, for which the use of rubber stoppers and gaskets is also authorized. Not authorized for transportation by air.

(d) * * *

(4) Specification 37P (§ 178.133 of this subchapter). Steel drums, not over 5-gallons capacity, with polyethylene liner (non-reusable container). Not authorized for transportation by air.

* * * * *

197. § 173.266 is amended by changing the word "chapter" to read "subchapter"; paragraph (f)(1)(i) is added; the introductory text of paragraphs (b) and (d), paragraphs (c), (c)(1) and (3) are revised to read as follows:

§ 173.266 Hydrogen peroxide solution in water.

* * * * *

(b) Hydrogen peroxide solution in water containing 52 percent or less hydrogen peroxide by weight must be packaged as prescribed in paragraph (a) of this section or as follows (vented packagings are not permitted aboard aircraft):

(c) Hydrogen peroxide solution in water containing over 8 percent hydrogen peroxide by weight and not exceeding 37 percent must be packaged as prescribed in paragraph (a) or (b) of this section or as follows (vented packagings are not permitted aboard aircraft):

(1) Specification 1A (§ 178.1 of this subchapter). Class carboys. The cushioning must be non-combustible mineral material, elastic wooden-strip packing, or large elastic cushions such as corks fastened securely in position. The use of hay, excelsior, ground cork, or similar material, whether treated or untreated, is prohibited. The carboy stoppers must be vented so as to prevent accumulation of internal pressure; use of cork gasket impregnated with paraffin is authorized. Not authorized for transportation by air.

* * * * *

(3) Specification 1D or 1E (§ 178.4, 178.7 of this subchapter). Glass carboys in boxes or plywood drums of not over 6.5 gallons nominal capacity. Means must be provided so that accumulated pressure in bottle may not exceed 10 pounds p.s.i.g. at 130° F. or will vent at a pressure not to exceed 10 pounds p.s.i.g. The cushioning must be non-combustible mineral material, elastic wooden-strip packaging, or large elastic cushions such as corks fastened securely in position. The use of hay, excelsior, ground cork, or similar material, whether treated or untreated, is prohibited. Not authorized for transportation by air.

(d) Hydrogen peroxide solution in water containing over 8 percent hydrogen peroxide by weight and not exceeding 10 percent must be packaged as prescribed in paragraph (a), (b), or (c) of this section or as follows (vented packagings are not permitted aboard aircraft):

* * * * *

(f) * * *

(1) * * *

(i) Each tank car must be marked "HYDROGEN PEROXIDE" in accordance with the requirements of § 172.330 of this subchapter.

* * * * *

198. § 173.267 is amended by changing the word "chapter" to read "subchapter"; the introductory text of paragraph (c) and (c)(4) are revised to read as follows:

§ 173.267 Mixed acid (nitric and sulfuric acid) (nitrating acid).

* * * * *

(c) Mixed acid (nitric and sulfuric acid) (nitrating acid), when offered for transportation by air must be packaged as follows:

* * * * *

(4) Not more than 1 quart of mixed acid may be shipped in one outside packaging.

199. § 173.268 is amended by changing the word "chapter" to read "subchapter"; paragraph (a)(1) is added; the introductory text of paragraphs (i) and (j), and paragraph (b)(4) are revised to read as follows:

§ 173.268 Nitric acid.

* * * * *

(a) * * *

(1) Each tank car must be marked "NITRIC ACID" in accordance with the

requirements of § 172.330 of this subchapter.

(b) * * *

(4) Specification 5C (§ 178.83 of this subchapter). Metal barrels or drums. Authorized for concentrations of nitric acid as limited by § 178.83–3(c) of this subchapter. Containers weighing less than 85 percent of their original marked weight are not authorized.

* * * * *

(i) Nitric acid of any concentration, when offered for transportation by air, must be packaged as follows:

* * * * *

(j) Nitric acid of 50 percent or less concentration, when offered for transportation by air, may in addition to the provisions of paragraph (i) of this section be packaged as follows:

* * * * *

200. § 173.269 as amended by changing the word "chapter" to read "subchapter"; paragraph (a) (2) is revised to read as follows:

§ 173.269 Perchloric acid.

(a) * * *

(2) Specification 1A, 1C, 1D, 1E, or 1K (§§ 178.1, 178.3, 178.4, 178.7, 178.14 of this subchapter). Glass carboys in boxes, kegs, or plywood drums. Not authorized for transportation by air.

* * * * *

§§ 173.270—173.271 [Amended]

201. In §§ 173.270 and 173.271 the word "chapter" is changed to read "subchapter".

202. § 173.272 is amended by changing the word "chapter" to read "subchapter" paragraphs (b), (i) (10), (11), (15), and (16) are revised to read as follows:

§ 173.272 Sulfuric acid.

* * * * *

(b) Sulfuric acid solutions in concentrations of 25 percent of less, in inside packagings of not over 8 fluid ounces capacity each, packed in strong outside packagings and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in event of breakage, are excepted from labeling (except when offered for transportation by air) and the specification packaging of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter except § 177.817.

* * * * *

(i) * * *

(10) Specification 16A (§ 178.185 of this subchapter). Wirebound wooden box (§ 178.185–22 of this subchapter) with an inside specification 2U (§ 178.24 of this subchapter) polyethylene container. The polyethylene container must be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads. Not authorized for transportation by air.

(11) Specification 12P (§ 178.211 of this subchapter). Fiberboard boxes with an inside specification 2U (§ 178.24 of this subchapter) polyethylene container not over 5-gallon capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in an inside box free of wire staples or other projections that could cause failures. Not authorized for transportation by air.

* * * * *

(15) Specification 1A, 1C, or 1K (§§ 178.1, 178.3, 178.14 of this subchapter). Carboys in boxes or kegs. Not authorized for transportation by air.

(16) Specification 1D or 1E (§§ 178.4, 178.7 of this subchapter). Glass carboys in boxes or plywood drums of not over 6.5 gallons nominal capacity. Not authorized for transportation by air.

* * * * *

203. § 173.273 is amended by changing the word "chapter" to read "subchapter"; paragraph (a) (4) (i) is added to read as follows:

§ 173.273 Sulfur trioxide, stabilized.

(a) * * *

(4) * * *

(i) Each tank car must be marked "SULFUR TRIOXIDE" in accordance with the requirements of § 172.330 of this subchapter.

* * * * *

§§ 173.274–173.275 [Amended]

204. In §§ 173.274 and 173.275 the word "chapter" is changed to read "subchapter".

205. § 173.276 is amended by changing the word "chapter" to read "subchapter" paragraph (a) (1) is revised to read as follows:

§ 173.276 Anhydrous hydrazine and hydrazine solution.

(a) * * *

(1) Specification 1D (§ 178.4 of this subchapter). Boxed glass carboys. Not authorized for transportation by air.

* * * * *

206. § 173.277 is amended by changing the word "chapter" to read "subchapter"; paragraphs (a) (2) and (5), (e) and the introductory text of paragraph (d) are revised; paragraphs (f) and (g) are added to read as follows:

§ 173.277 Hyprochlorite solutions.

(a) * * *

(2) Specification 1A, 1C, 1D, or 1E (§§ 178.1, 178.3, 178.4, 178.7 of this subchapter). Glass carboys in boxes, kegs or plywood drums. Not authorized for transportation by air.

* * * * *

(5) Specification 12P (§ 178.211 of this subchapter). Fiberboard boxes with inside specification 2U (§ 178.24 of this subchapter) polyethylene container not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures. Not authorized for transportation by air.

* * * * *

(d) Glass inside packaging of not more than 4 fluid ounces capacity each, packed in strong outside packaging, and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in the event of breakage, are excepted from labeling (except when offered for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

* * * * *

(e) Polyethylene pouches not over 2½ ounces capacity each, heat sealed, and formed of polyethylene, or other suitable plastic, not less than 0.0035-inch in thickness to which must be laminated a 0.0015-inch, 25-pound basis weight white sulphate paper, when securely packed not more than 144 pouches in a strong fiberboard box, are excepted from labeling (except when offered for transportation by air) and the specification packaging requirements, of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

(f) Special exceptions for shipment of certain hypochlorite solutions in the ORM–D class are provided in Subpart N of this part.

(g) Shipments by tank motor vehicle are not subject to any requirements of this subchapter.

207. § 173.278 is amended by changing the word "chapter" to read "subchapter"; paragraph (b) (2) is revised to read as follows:

§ 173.278 Nitrohydrochloric acid.

* * * * *

(b) * * *

(2) Specification 1A, 1D, or 1E (§§ 178.1, 178.4, 178.7 of this subchapter). Glass carboys in boxes or plywood drums, not over 5 gallons nominal capacity for specification 1A and not over 6.5 gallons nominal capacity for specifications 1D and 1E. Not authorized for transportation by air.

208. § 173.279 is amended by changing the word "chapter" to read "subchapter"; paragraph (b) is revised to read as follows:

§ 173.279 Anisoyl chloride.

* * * * *

(b) Inside packagings of not over 8 fluid ounces capacity each, packed in strong outside packaging, and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in the event of breakage, are excepted from labeling (except that labeling is required for transportation by air) and specification packaging requirements of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter except § 177.817.

209. § 173.280 is amended by changing the word "chapter" to read "subchap-

ter"; the heading, introductory text of paragraph (a) and paragraph (a) (5) are revised to read as follows:

§ 173.280 Trichlorosilanes.

(a) Allyl trichlorosilane, amyl trichlorosilane, butyl trichlorosilane, chlorophenyl trichlorosilane, cyclohexenyl trichlorosilane, cyclohexyl trichlorosilane, dichlorophenyl trichlorosilane, diphenyl dichlorosilane, dodecyl trichlorosilane, ethyl phenyl dichlorosilane, hexadecyl trichlorosilane, hexyl trichlorosilane, nonyl trichlorosilane, octadecyl trichlorosilane, octyl trichlorosilane, phenyl trichlorosilane, and propyl trichlorosilane must be packaged as follows;

• • • • •

(5) Specification 5, 5B, 5C, and 17E single-trip (§§ 178.80, 178.82, 178.83, 178.116 of this subchapter). Metal drums. Not authorized for shipment by air.

• • • • •

§§ 173.281—173.283 [Amended]

210. In §§ 173.281, 173.282, and 173.283 the word "chapter" is changed to read "subchapter".

211. § 173.286 is amended by changing the world "chapter" to "subchapter"; the introductory text of paragraph (b) is revised to read as follows:

§ 173.286 Chemical kits.

• • • • •

(b) Chemical kits containing corrosive liquids in inside packagings of not over 6 fluid ounces capacity each are excepted from labeling (except when offered for transportation by air) and the specification packaging requirements of this subchapter if all of the following requirements are complied with. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

• • • • •

212. § 173.287 is amended by changing the word "chapter" to read "subchapter"; the introductory text of paragraph (b) and paragraph (b) (1) are revised to read as follows:

§ 173.287 Chromic acid solution.

• • • • •

(b) Chromic acid solutions must be packaged in specification containers as follows:

(1) Specification 1A (§ 178.1 of this subchapter), Glass carboy in a box. Not authorized for transportation by air.

• • • • •

213. § 173.288 is amended by changing the word "chapter" to read "subchapter"; the heading, the introductory text of paragraph (a) and paragraph (a) (2) are revised to read as follows:

§ 173.288 Chloroformates.

(a) Ally chloroformate, benzyl chloroformate, ethyl chloroformate, and methyl chloroformate must be packaged as follows:

• • • • •

(2) Specification 1A (§ 178.1 of this subchapter). Boxed carboys. Glass bottles having nominal capacity of 3 gallons also authorized when packed and tested in accordance with requirements of specification 1A (§ 178.1 of this subchapter); necks must be protected during shipment. Not authorized for transportation by air.

• • • • •

214. § 173.289 is amended by changing the word "chapter" to read "subchapter"; paragraphs (a) (2), (7) and (9) are revised; paragraph (a) (2) (i) is added to read as follows:

§ 173.289 Formic acid and formic acid solutions.

(a) • • •

(2) Specification 103CW or 103EW (§§ 179.200 and 179.201 of this subchapter). Tank cars. Specification 103EW tanks must be of Type 316 stainless steel.

(i) Each tank car must be marked "FORMIC ACID" in accordance with requirements in § 172.330 of this subchapter.

• • • • •

(7) Specification 17H (§ 178.118 of this subchapter). Metal drums (single-trip) equipped with bag type liners of material and construction approved by the Department. Each drum must have two diametrically opposite vent holes ¼ inch diameter in the side wall at each end in close proximity to the top curl and bottom chime. Interior of welded side seam must be covered or otherwise treated to provide a nonabrasive surface. Not authorized for transportation by air.

• • • • •

(9) Specification 1EX (§ 178.6 of this subchapter). Carboys in plywood drums. Not authorized for transportation by air.

• • • • •

§ 173.290 [Amended]

215. In § 173.290 the word "chapter" is changed to read "subchapter".

216. § 173.291 is amended by changing the word "chapter" to read "subchapter"; the intro text of paragraph (a), (a) (1) and (2) are revised to read as follows:

§ 173.291 Flame retardant compound, liquid.

(a) Flame retardant compound, liquid, must be packaged as follows:

(1) Specification 1A, 1B, or 1C (§§ 178.1, 178.2, 178.3 of this subchapter). Carboys in boxes or kegs which must be closed, and when reused must be reconditioned and tested, as provided in the specifications. Not authorized for transportation by air.

(2) Specification 1D or 1E (§§ 178.4, 178.7 of this subchapter). Glass carboys in boxes or plywood drums of not over 6.5 gallons. nominal capacity. Means must be provided so that accumulated pressure in bottle may not exceed 10 pounds per square inch gauge at 130° F. (55° C.), or will vent at a pressure not to exceed 10 psig. Not authorized for transportation by air.

• • • • •

§§ 173.292–173.294 [Amended]

217. In §§ 173.292, 173.293, and 173.294 the word "chapter" is changed to read "subchapter".

218. § 173.295 is amended by changing the word "chapter" to read "subchapter"; paragraph (a) (3) is revised to read as follows:

§ 173.295 Benzyl chloride.

(a) • • •

(3) Specification 1A, 1C, 1D, or 1E (§§ 178.1, 178.3, 178.4, 178.7 of this subchapter). Glass carboys in boxes, kegs or plywood drums. Not authorized for transportation by air.

• • • • •

§§ 173.296–173.297 [Amended]

219. In §§ 173.296 and 173.297 the word "chapter" is changed to read "subchapter".

220. § 173.298 is amended by changing the word "chapter" to read "subchapter"; paragraph (a) (4) is revised to read as follows:

§ 173.298 Memtetrahydro phthalic anhydride.

(a) • • •

(4) Specification 37P (§ 178.133 of this subchapter). Steel drums with polyethylene liner (non-reusable container). Authorized only for materials that will not react with polyethylene and result in a packaging failure. Not authorized for transportation by air.

§§ 173.299—173.299a [Amended]

221. In §§ 173.299 and 173.299a the word "chapter" is changed to read "subchapter".

Subpart G—Compressd Gases; Definition and Preparation

§ 173.300 [Amended]

222. In § 173.300 the word "chapter" is changed to read "subchapter".

§§ 173.302—173.303 [Amended]

223. In §§ 173.302 and 173.303 the word "chapter" is changed to read "subchapter".

224. In § 173.304 the word "chapter" is changed to read "subchapter".

§ 173.304 [Amended]

§ 173.305 [Amended]

225. § 173.305 the word "chapter" is changed to read "subchapter".

226. § 173.306 is revised to read as follows:

§ 173.306 Limited quantities of compressed gases.

(a) Limited quantities of compressed gases for which exceptions are permitted as noted by reference to this section in § 172.101 of this subchapter are excepted from labeling (except when offered for transportation by air) and, unless required as a condition of the exception, specification packaging requirements of this subchapter when packed in accordance with the following paragraphs. In addition, shipments by rail are not subject to Part 174 of this subchapter, except § 174.24 and

shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

(1) When in containers of not more than 4 fluid ounces capacity (7.22 cubic inches or less) except cigarette lighters. Special exceptions for shipment of certain compressed gases in the ORM–D class are provided in Subpart N of this part.

(2) When in metal containers filled with a material that is not classed as a hazardous material to not more than 90 percent of capacity at 70° F. then charged with nonflammable, nonliquefied gas. Each container must be tested to three times the pressure at 70° F. and, when refilled, be retested to three times the pressure of the gas at 70° F. Also, one of the following conditions must be met:

(i) Container is not over 1 quart capacity and charged to not more than 170 psig at 70° F. and must be packed in a strong outside packaging, or

(ii) Container is not over 30 gallons capacity and charged to not more than 75 psig at 70° F.

(3) When in a metal container charged with a solution of materials and compressed gas or gases which is nonpoisonous, provided all of the following conditions are met. Special exceptions for shipment of aerosols in the ORM–D class are provided in Subpart N of this part.

(i) Capacity must not exceed 50 cubic inches (27.7 fluid ounces).

(ii) Pressure in the container must not exceed 180 psig at 130° F. If the pressure exceeds 140 psig at 130° F., but does not exceed 160 psig at 130° F., a specification DOT 2P (§ 178.33 of this subchapter) inside metal container must be used; if the pressure exceeds 160 psig at 130° F., a specification DOT 2Q (§ 178.33a of this subchapter) inside metal container must be used. In any event, the metal container must be capable of withstanding without bursting a pressure of one and one-half times the equilibrium pressure of the content at 130° F.

(iii) Liquid content of the material and gas must not completely fill the container at 130° F.

(iv) The container must be packed in strong outside packagings.

(v) Each completed container filled for shipment must have been heated until the pressure in the container is equivalent to the equilibrium pressure of the content at 130° F. (55° C.) without evidence of leakage, distoration, or other defect.

(vi) Each outside packaging must be marked "INSIDE CONTAINERS COMPLY WITH PRESCRIBED REGULATIONS."

(b) *Exemptions for foodstuffs, soap, biologicals, electronic tubes, and audible fire alarm systems.* Compressed gases, (except poisonous gases as defined by § 173.326) for which exceptions are provided as indicated by reference to this section in § 172.101 of this subchapter, when in accordance with one of the following paragraphs are excepted from labeling (except when offered for transportation by air) and the specification packaging requirements of this subchapter. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817. Special exceptions for shipment of certain compressed gases in the ORM–D class are provided in Subpart N of this part.

(1) Foodstuffs or soaps in a nonrefillable metal container not exceeding 50 cubic inches capacity (27.7 fluid ounces), with double or emulsified compressed gas, provided the pressure in the container does not exceed 140 p.s.i.g. at 130° F. The metal container must be capable of withstanding without bursting a pressure of one and one-half times the equilibrium pressure of the content at 130° F.

(i) Containers must be packed in strong outside packagings.

(ii) Liquid content of the material and the gas must not completely fill the container at 130° F.

(iii) Each outside packaging must be marked "INSIDE CONTAINERS COMPLY WITH PRESCRIBED REGULATIONS."

(2) Cream in refillable metal receptacles with soluble or emulsified compressed gas. Containers must be of such design that they will hold pressure without permanent deformation up to 375 psig and must be equipped with a device designed so as to release pressure without bursting of the container or dangerous projection of its parts at higher pressures. This exception applies to shipments offered for transportation by refrigerated motor vehicles only.

(3) Nonrefillable metal containers charged with a solution containing biological products or a medical preparation which could be deteriorated by heat, and compressed gas or gases, which is nonpoisonous and nonflammable. The capacity of each container may not exceed 35 cubic inches (19.3 fluid ounces). The pressure in the container may not exceed 140 psig at 130° F., and the liquid content of the product and gas must not completely fill the containers at 130° F. One completed container out of each lot of 500 or less, filled for shipment, must be heated, until the pressure in the container is equivalent to equilibrium pressure of the content at 130° F. There must be no evidence of leakage, distortion, or other defect. Container must be packed in strong outside packagings.

(4) Electronic tubes, each having a volume of not more than 30 cubic inches and charged with gas to a pressure of not more than 35 psig and packed in strong outside packagings.

(5) Audible fire alarm systems powered by a compressed gas contained in an inside metal container when shipped under the following conditions:

(i) Each inside container must have contents which are not flammable, poisonous, or corrosive as defined under this part;

(ii) Each inside container may not have a capacity exceeding 35 cubic inches (19.3 fluid ounces);

(iii) Each inside container may not have a pressure exceeding 70 psig at 70° F. and the liquid portion of the gas may not completely fill the inside container at 130° F., and

(iv) Each nonrefillable inside container must be designed and fabricated with a burst pressure of not less than four times its charged pressure at 130° F. Each refillable inside container must be designed and fabricated with a burst pressure of not less than five times its charged pressure at 130° F.

(c) *Fire extinguishers.* Fire extinguishers charged with a compressed gas to not more than 240 psig at 70° F. are excepted from labeling (except when offered for transportation by air) and the specification packaging requirements of this subchapter when shipped under the following conditions. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817. Special exceptions for shipments of fire extinguishers in the ORM–D class are provided under Subpart N of this part.

(1) Each fire extinguisher must be shipped as an inside packaging;

(2) Each fire extinguisher must have contents which are not flammable, poisonous, or corrosive as defined under this Part;

(3) Each fire extinguisher under stored pressure may not have an internal volume exceeding 1,100 cubic inches. For fire extinguishers not exceeding 35 cubic inches capacity, the liquid portion of the gas plus any additional liquid or solid must not completely fill the container at 130° F. Fire extinguishers exceeding 35 cubic inches capacity may not contain any liquefied compressed gas;

(4) Each fire extinguisher manufactured on and after January 1, 1976, must be designed and fabricated with a burst pressure of not less than six times its charged pressure at 70° F. when shipped.

(5) Each fire extinguisher must be tested, without evidence of failure or damage, to at least three times its charged pressure at 70° F. but not less than 120 psig before initial shipment. For any subsequent shipment, each fire extinguisher must be in compliance with the retest requirements of the Occupational Safety and Health Administration Regulations of the Department of Labor, 29 CFR 1910.157(d), and;

(6) Each fire extinguisher must be marked to indicate the year of the test (within 90 days of the actual date of the original test) and "MEETS DOT REQUIREMENTS." This marking will be considered a certification that the fire extinguisher was manufactured in accordance with the requirements of this section.

NOTE: The words "This extinguisher meets all requirements of 49 CFR 173.306" may be displayed in place of "MEETS DOT REQUIREMENTS" on extinguishers manufactured prior to January 1, 1976.

(7) When specification 2P or 2Q packagings are used, paragraphs (c) (4) through (6) of this section are not applicable provided each packaging meets

the requirements of paragraph (a) of this section.

(d) *Truck bodies or trailers on flat cars; automobiles, motorcycles, tractors, or other self-propelled vehicles.* (1) Truck bodies or trailers with automatic heating or refrigerating equipment of the gas burning type may be shipped with fuel tanks filled and equipment operating or inoperative, when used for the transportation of other freight and loaded on flat cars as part of a joint rail-highway movement, provided the equipment and fuel supply are of a type approved by the Bureau of Explosives. The heating or refrigerating units are not subject to any other requirements of this subchapter and are to be considered as carriers equipment not as shipments.

(2) Automobiles, motorcycles, tractors, or other self-propelled vehicles equipped with liquefied petroleum gas or other compressed gas fuel tanks, provided such tanks are securely closed, are not subject to any other requirements for transportation by rail or highway. For transportation by water, see section 176.328 and 176.78(k) of this subchapter. For transportation by air, the fuel tank must be removed or emptied and securely closed.

(e) *Refrigerating machines.* (1) New (unused) refrigerating machines or components thereof are excepted from the specification packaging requirements of this part if they meet the following conditions. In addition shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

(i) Each pressure vessel may not contain more than 1,000 pounds of Group I refrigerant as classified in American National Standard B9.1 or not more than 50 pounds of refrigerant other than Group I.

(ii) Machines or components having two or more charged vessels may not contain an aggregate of more than 2,000 pounds of Group I refrigerant or more than 100 -pounds of refrigerant other than Group I.

(iii) Each pressure vessel must be equipped with a safety device meeting the requirements of American National Standard B9.1.

(iv) Each pressure vessel must be equipped with a shut-off valve at each opening except openings used for safety devices and with no other connection. These valves must be closed prior to and during transportation.

(v) Pressure vessels must be manufactured, inspected and tested in accordance with American National Standard B9.1, or when over 6 inches internal diameter, in accordance with the ASME Code.

(vi) All parts subject to refrigerant pressure during shipment must be tested in accordance with American National Standard B9.1.

(vii) The liquid portion of the refrigerant, if any, may not completely fill any pressure vessel at 130° F.

(viii) The amount of refrigerant, if liquefied, may not exceed the filling density prescribed in § 173.304.

(f) *Hydraulic accumulators.* The following applies to hydraulic accumulators containing nonliquefied, nonflammable gas, and nonflammable liquids, fabricated from materials which will not fragment upon rupture:

(1) Hydraulic accumulators installed in motor vehicles, construction equipment, and assembled machinery and designed and fabricated with a burst pressure of not less than five times their charged pressure at 70° F., when shipped, are not subject to the requirements of this subchapter.

(2) Hydraulic accumulators charged to not more than 200 p.s.i.g. at 70° F. are excepted from labeling (except when offered for transportation by air) and the specification packaging requirements of this subchapter when shipped under the following conditions. In addition, shipments by rail are not subject to Part 174 of this subchapter except § 174.24 and shipments by highway are not subject to Part 177 of this subchapter, except § 177.817.

(i) Each accumulator must be shipped as an inside packaging;

(ii) Each accumulator may not have a gas space exceeding 2,500 cubic inches under stored pressure, and

(iii) Each accumulator must be tested, without evidence of failure or damage, to at least three times its charged pressure of 70° F., but not less than 120 p.s.i. before initial shipment and before each refilling and reshipment.

(3) Hydraulic accumulators with a charging pressure exceeding 200 p.s.i.g. at 70° F. are excepted from labeling (except when offered for transportation by air) and the specification packaging requirements of this subchapter when shipped under the following conditions:

(i) Each accumulator must be in compliance with the requirements stated in paragraph (a)(2), (i), (ii), and (iii) of this section, and

(ii) Each accumulator must be designed and fabricated with a burst pressure of not less than five times its charged pressure at 70° F. when shipped.

227. § 173.307 is added to read as follows:

§ 173.307 Exceptions for compressed gases.

(a) The following materials are not subject to the requirements of this subchapter:

(1) Carbonated beverages.

(2) Inflated tires. (maximum pressure of 100 psig at 70°F)

(3) Balls used for sports.

(4) Refrigerating machines including dehumidifiers and air conditioners, and components thereof such as precharged tubing containing 25 pounds or less of nonflammable liquefied gas.

228. § 173.308 is added to read as follows:

§ 173.308 Cigarette lighter or other similar device charged with fuel.

(a) In addition to the requirements of § 173.21(d), a cigarette lighter or other similar device charged with butane or a flammable gas having similar properties must be shipped in accordance with the following:

(1) No more than 2.3 fluid ounces of liquefied gas may be loaded into each device;

(2) The liquid portion of the gas may not exceed 85 percent of the volumetric capacity of each fluid chamber at 60° F.

(3) Each device, including closures, must be capable of withstanding without leakage or rupture an internal pressure of at least two times the vapor pressure of the fuel at 130° F; and

(4) Devices must be overpacked in packaging that is designed or arranged to prevent movement of the device itself.

229. § 173.314 is amended by changing the word "chapter" to read "subchapter" in paragraph (b)(4); the second entry in the first column of the table in paragraph (c) is changed to read "Ammonia solution"; paragraphs (b) (5) and (6) are added to read as follows:

§ 173.314 Requirements for compressed gases in tank cars.

* * * * * *

(b) * * *

(5) Each tank car, except series 106A*** or 110A***, containing a flammable compressed gas or flammable compressed gas mixture must be marked with the name of contents (§ 172.101 of this subchapter) in accordance with the requirements of § 172.330 of this subchapter or as otherwise approved by the Department.

(6) Each tank car containing anhydrous ammonia or chlorine must be marked "ANHYDROUS AMMONIA" or "CHLORINE," as appropriate, in accordance with the requirements of § 172.330 of this subchapter.

* * * * * *

§ 173.315 [Amended]

230. § 173.315 is amended by changing the word "chapter" to read "subchapter"; the fifth entry in the first column of the table in paragraph (a)(2) is changed to read "Ammonia solution."

§ 173.316 [Amended]

231. In § 173.316 the word "chapter" is changed to read "subchapter".

232. Subpart H heading is revised to read as follows:

Subpart H—Poisonous Materials, Etiologic Agents, and Radioactive Materials; Definitions and Preparation

233. § 173.325 is revised to read as follows:

§ 173.325 Classes of poisonous materials.

(a) Poisonous materials for the purpose of this subchapter are divided into three groups according to the degree of hazard in transportation.

(1) Poison A.

(2) Poison B.

(3) Irritating material.

234. In § 173.326, the Heading is revised to read as follows:

§ 173.326 Poison A.

* * * * * *

235. In § 173.327 the Heading is revised; paragraphs (e) and (f) are added to read as follows:

§ 173.327 General packaging requirements for Poison A materials.

* * * * *

(e) Unless otherwise specified in this subchapter, packaging used for the transportation of any Poison A material may be completely filled at 130° F.

(f) Each tank car, except series 106A*** and 110A***, containing Poison A materials must be marked with the name of contents (§ 172.101 of this subchapter) in accordance with the requirements of § 172.330 of this subchapter.

236. In § 173.328 the heading and the introductory text of paragraph (a) are revised to read as follows:

§ 173.328 Poison A materials not specifically provided for.

(a) Poison A materials, as defined in § 173.326, other than those for which special packaging requirements are prescribed in this part, must be packaged as follows:

* * * * *

§ 173.329 [Amended]

237. In § 173.329 the word "chapter" is changed to read "subchapter".

238. In § 173.330 paragraph (a) is revised to read as follows:

§ 173.330 Chemical ammunition.

(a) Projectiles, shells, bombs, and grenades containing Poison A materials but not equipped or packaged with ignition elements, bursting charges, detonating fuzes, or explosive components, may be shipped only by, for, or to the Department of Defense. Each shipment must be packaged, marked, and labeled as required by their regulations. Each package must be labeled with POISON GAS label marked "NONEXPLOSIVE" and also marked with the proper shipping name. (See §§ 173.53(r) and 173.59 for explosive chemical ammunition.)

* * * * *

239. § 173.331 is revised to read as follows:

§ 173.331 Gas identification sets.

(a) Gas identification sets containing Poison A materials, irritating materials, and chlorine must be packaged in specification 15A or 15B (§§ 178.168, 178.169 of this subchapter). Wooden boxes, under the following conditions:

(1) Gas identification sets containing Poison A materials and irritating materials may be shipped in amounts not exceeding 6 cubic centimeters, if a liquid, or 5 grams, if a solid, when mixed with or absorbed in activated charcoal or silica gel, or other absorbent medium, and packed in strong glass bottles of not less than 4 fluid ounces capacity. The Poison A materials and chlorine may be shipped if the gas itself is absorbed in activated charcoal or silica gel, or other absorbent medium, and packed in the same type 4-ounce bottles as described above. Each bottle as herein specified must be surrounded with appropriate absorbent cushioning material, and enclosed in a hermetically sealed metal can. Each can must be surrounded on all sides by at least 1 inch of dry, fine sawdust or wood pulp. The cans must be packed in an outside wooden box, specification 15A or 15B (§§ 178.168, 178.169 of this subchapter). The bottles must be closed with ground-in glass stoppers securely fastened. The cushioning material around the bottle must be at least 1 inch thick. The cans must be made from metal of thickness not less than 30 gauge, United States standard. There must be not more than a total of 100 grams or cubic centimeters or a combination of both, in each outside wooden box.

(b) Gas identification sets containing Poison A materials and irritating materials must be packaged as follows:

(1) The liquids or liquefied gases in hermetically sealed glass tubes containing not to exceed 40 cubic centimeters each. Each tube must be securely cushioned and packed in an individual mailing tube with screw-thread metal cover. Not more than 12 such mailing tubes, cushioned with corrugated fiberboard, may be packed in a closed fiberboard container, not to exceed 4 such fiberboard containers, containing an aggregate of not to exceed 48 glass tubes cushioned and packed in an outside steel cylinder of not less than 0.145-inch wall thickness, which is closed by a plate, bolted to a flange welded to cylinder wall. Suitable gasket must be placed between flange and head plate, and closure must prevent leakage of any gas.

(c) Gas identification training sets containing Poison A materials and irritating materials must be packaged as follows:

(1) The Poison A materials and irritating material, in amounts not exceeding 5 cubic centimeters, if a liquid, or 20 grams, if a solid, when mixed with or absorbed in activated charcoal, silica gel, crepe rubber, or other absorbent medium, must be packed in strong glass bottles of not less than 2 fluid ounces capacity, equipped with a polyethylene liner; each bottle as herein specified must have a metal screw-cap closure, equipped with a built-in compression type spring and an insert in the opening of the bottle to match so that when tightened an airtight seal is obtained. Twelve bottles, containing articles as described in this paragraph and not exceeding 100 cubic centimeters or grams, or a combination of both, must be placed in a modified styrene plastic carrying case, in three rows of four bottles each and fitted with a fiberboard cell or separator. The void space around the individual bottles, and around all interior sides of the carrying case, must be filled with dry, fine sawdust or vermiculite. A sheet of sponge rubber must be fitted to the inside of the top and bottom of the carrying case to provide additional cushioning and insure a snug fit of the bottles when the top is secured. The carrying case must be fitted into a snug fitting fiberboard box, domestic type. The case must then be packed in a nailed wooden box, specification 15A or 15B (§§ 178.168, 178.169 of this subchapter), which must be fitted with a waterproof case liner.

§ 173.332 [Amended]

240. In § 173.332 the word "chapter" is changed to read "subchapter".

241. In § 173.333 paragraph (a)(2) is revised to read as follows:

§ 173.333 Phosgene or diphosgene.

(a) * * *

(2) Specification 106A500X (§§ 179.300, 179.301 of this subchapter) tanks. Authorized only for phosgene. Each tank must be approved by the Bureau of Explosives. Tanks must not be equipped with safety devices of any type. Outage must be sufficient to prevent tanks from becoming liquid full at 130° F. (55°.C.). (See §§ 174.200 and 177.834(m) of this subchapter for special requirements for rail and highway shipments.)

* * * * *

242. In § 173.334 the heading and paragraph (a) are revised to read as follows:

§ 173.334 Organic phosphates mixed with compressed gas.

(a) Hexaethyl tetraphosphate, parathion, tetraethyl dithio pyrophosphate, tetraethyl pyrophosphate, or other Poison B organic phosphate, n.o.s. (including a compound or mixture), may be mixed with a compressed gas which must be nonflammable. This mixture must not contain more than 20 percent by weight of organic phosphate and must be packaged as follows:

(1) Specification 3A240, 3AA240, 3B240, 4A240, 4BA240, or 4BW240 (§§ 178.36, 178.37, 178.38, 178.49, 178.50, 178.51, 178.61, of this subchapter) cylinders meeting the following requirements;

(i) Each cylinder may be charged with not more than 10 pounds of the mixture, to a maximum filling density of not more than 80 percent of the water capacity;

(ii) Each cylinder must be charged in compliance with § 173.301 (e) and (f);

(iii) No cylinder may be equipped with an eduction tube or a fusible plug;

(iv) No cylinder may be equipped with any valve unless the valve is a type approved by the Department for this installation.

(v) Cylinders must be overpacked in a box so arranged to protect each valve or other closing device from damage. No more than four cylinders may be packed in a box except that in a wooden box, up to 12 cylinders may be so packed. Each box with its closing device protection must be sufficiently strong to protect all parts of each inside cylinder from deformation or breakage if the completed package were dropped six feet onto solid concrete, impacting at the weakest point.

* * * * *

§ 173.335 [Reserved]

243. § 173.335 is deleted.

244. § 173.336 paragraph (a)(2) is amended by changing the word "chapter" to read "subchapter"; paragraph (a)(3) is revised to read as follows:

§ 173.336 Nitrogen dioxide, liquid; nitrogen peroxide, liquid; and nitrogen tetroxide, liquid.

(a) * * *

(3) Specification 106A500X (§§ 179.300, 179.301 of this subchapter) tanks. Each tank must be equipped with gas-

tight valve protection caps which must be approved by the Bureau of Explosives. Tanks must not be equipped with safety devices of any type. Outage must be sufficient to prevent tanks from becoming liquid full at 130° F. (55° C.). (See §§ 174.200 and 177.834(m) of this subchapter for special requirements for rail and highway shipments.)

• • • • •

§ 173.337 [Amended]

245. In § 173.337 the word "chapter" is changed to read "subchapter".

246. In § 173.338 is amended by changing the word "chapter" to read subchapter" paragraph (a)(3) is revised to read as follows:

§ 173.338 Nitrogen tetroxide—nitric oxide mixtures containing up to 33.2 percent weight nitric oxide.

(a) • • •

(3) Specification 106A500X (§§ 179.300, 179.301 of this subchapter) tanks. Each tank must be equipped with gastight valve protection caps which must be approved by the Bureau of Explosives. Tanks must not be equipped with safety devices of any type. Outage must be sufficient to prevent tanks from becoming liquid full at 130° F. (55° C). (See §§ 174.200 and 177.834(m) of this subchapter for special requirements for rail and highway shipments.)

• • • • •

247. In 173.343 is amended by changing the word "chapter" is changed to read "subchapter"; the heading is revised to read as follows:

§ 173.343 Poison B.

• • • • •

248. In § 173.344 the heading, introductory text of paragraph (b) and paragraph (b)(1) are revised to read as follows:

§ 173.344 General packaging requirements for Poison B liquids.

• • • • •

(b) Packagings containing liquid material may not be completely filled. Outage must be as follows:

(1) For packagings of 110 gallons or less, sufficient outage must be provided so that the packaging will not liquid full at 130° F. (55° C.).

• • • • •

249. § 173.345 is revised to read as follows:

§ 173.345 Limited quantities of Poison B liquids.

(a) Limited quantities of Poison B liquids for which exceptions are permitted as noted by reference to this section in § 172.101 of this subchapter or as provided in § 173.359(c), in tightly closed inside packagings, securely cushioned when necessary to prevent breakage, are excepted from the specification packaging requirements of this part, when packaged as follows:

(1) In glass packagings not over 1 quart capacity each, or in metal containers or polyethylene bottles not over 1 gallon capacity each, packed in strong outside wooden boxes or barrels.

(2) In glass packagings not over 1 pint capacity each, or in metal or polyethylene packagings (other than bags) not over 1 quart capacity each, packed in strong outside fiberboard boxes.

(b) Special exceptions for shipment of certain drugs in the ORM–D class are prescribed in Subpart N of this part.

250. § 173.346 is amended by changing the word "chapter" to read "subchapter"; the heading, introductory text of paragraph (a) and paragraphs (a) (3), (13), (19), (24), and (25) are revised to read as follows:

§ 173.346 Poison B liquids not specifically provided for.

(a) Poison B liquid, as defined in § 173.343, other than those for which special requirements are prescribed, must be packaged as follows:

• • • • •

(3) Specification 37B (§ 178.132 of this subchapter). Metal drums (single-trip containers), welded side seams, openings not over 2.3 inches in diameter, capacity not over 10 gallons. Not authorized for transportation by air.

• • • • •

(13) Specification 1A, 1D, or 1E (§§ 178.1, 178.4, 178.7 of this subchapter). Glass carboys in wooden boxes or plywood drums. Not authorized for transportation by air.

• • • • •

(19) Specification 37P (§ 178.133 of this subchapter). Steel drums, not over 5 gallons capacity, with polyethylene liner (non-reusable container). Drums exceeding 1 gallon capacity must be constructed of at least 24-gauge metal. Hole in steel drum body must be suitably plugged. Authorized only for materials that will not react with polyethylene and result in container failure. Not authorized for transportation by air.

• • • • •

(24) Specification 12P (§ 178.211 of this subchapter). Fiberboard boxes with inside specification 2U (§ 178.24 of this subchapter) polyethylene containers not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures. Not authorized for transportation by air.

(25) Specification 16A (§ 178.185 of this subchapter). Wirebound wooden box (see § 178.185–22 of this subchapter) with inside specification 2U (§ 178.24 of this subchapter) polyethylene container. The polyethylene container must be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads. Not authorized for transportation by air.

• • • • •

251. § 173.347 is amended by changing the word "chapter" to read "subchapter"; Note 1 following paragraph (a)(1) is deleted as follows:

§ 173.347 Aniline oil.

(a) • • •

(1) • • •

NOTE 1: [Deleted]

• • • • •

252. § 173.348 is amended by changing the word "chapter" to read "subchapter" in paragraph (a)(3); paragraph (a)(2) is revised to read as follows:

§ 173.348 Arsenic acid.

(a) • • •

(2) Specification 1A, 1C, or 1D (§§ 178.1, 178.3, 178.4 of this subchapter). Glass carboys in boxes or kegs. Not authorized for transportation by air.

• • • • •

253. § 173.349 is amended by changing the word "chapter" to read "subchapter"; paragraph (a)(2) is revised to read as follows:

§ 173.349 Carbolic acid (phenol) liquid.

(a) • • •

(2) Specification 1A, 1C, or 1D (§§ 178.1, 178.3, 178.4 of this subchapter). Glass carboys in boxes or kegs. Not authorized for transportation by air.

• • • • •

254. § 173.350 paragraph (a) is revised to read as follows:

§ 173.350 Chemical ammunition.

(a) Chemical ammunition consisting of projectiles, shells, bombs, grenades and other containers filled with Poison B materials, without ignition elements, bursting charges, detonating fuzes, or other explosive components, must be packed for shipment in strong outside wooden or metal boxes. Boxes must be marked with proper shipping name and labeled as prescribed by this Part for gases, liquids, or chemicals contained therein.

• • • • •

255. § 173.351 is revised to read as follows:

§ 173.351 Hydrocyanic acid solutions.

(a) Hydrocyanic acid solutions must be packed in glass bottles not over 1 pound capacity each for solutions of not over 5 percent hydrocyanic acid and not over 5 pints capacity each for solutions of not over 2 percent strength and must be packaged as follows:

(1) Specification 15A, 15B, 15C, 16A, or 19A (§§ 178.168, 178.169, 178.170, 178.185, 178.190 of this subchapter). Wooden boxes. Completed package, with glass packaging filled with water, must be capable of withstanding six four-foot drops onto solid concrete in the following order; bottom, four sides, and top, without breakage.

256. § 173.352 is amended by changing the word "chapter" to read "subchapter" in paragraphs (a) (1) and (2); the heading, the introductory text of paragraph (a) and paragraph (a)(2) are revised to read as follows:

§ 173.352 Sodium and potassium cyanide solutions.

(a) Sodium and potassium cyanide solutions must be packed in specification containers as follows:

* * * * *

(2) Specification 17E or 37B (§ 178.116, 178.132 of this subchapter). Metal drums (single-trip), with welded side seams, with openings not exceeding 2.3 inches in diameter. Specification 37B not authorized for transportation by air.

* * * * *

257. § 173.353 is amended by changing the word "chapter" to read "subchapter"; the heading and intro text of paragraph (a), (a)(1), (a)(2), (a)(6), and (c) are revised to read as follows:

§ 173.353 Methyl bromide and methyl bromide mixtures.

(a) Methyl bromide, liquid (bromomethane); methyl bromide and ethylene dibromide mixture, liquid; methyl bromide and more than 2% chloropicrin mixture, liquid; or methyl bromide and nonflammable, nonliquefied compressed gas mixtures, liquid; must be packed in specification containers as follows:

(1) Specification 5A (§ 178.81 of this subchapter). Metal drums not exceeding 30 gallons capacity or metal drums of bilge type not exceeding 33 gallons capacity and with openings not exceeding 2.3 inches in diameter. Not authorized for mixtures containing any compressed gas.

(2) Specification 15A, 15B, 15C, 16A, 19A, or 12B (§§ 178.168, 178.169, 178.170, 178.185, 178.190, 178.205 of this subchapter). Wooden, wire-bound wooden, or fiberboard boxes, with inside metal cans containing not over 1 pound each; outage is required so the can will not become liquid full at 130° F. (55° C.). Cans must be of tinplate or lined with suitable material and must have concave or pressure ends. Cans must be able to withstand an interior pressure of 130 pounds per square inch gauge without evidence of leakage or permanent distortion. Pressure of contents must not exceed 130 psig at 130° F. (55° C.)

* * * * *

(6) Specification 106A500X (§§ 179.300, 179.301 of this subchapter) tanks. Outage must be sufficient to prevent tanks from becoming liquid full at 130° F. (55° C.). (See §§ 174.200 and 177.834 (m) of this subchapter for special requirements for rail and highway shipments.)

* * * * *

(c) Outage must be sufficient to prevent cylinders or spheres from becoming entirely filled with liquid at 130° F. (55° C.) and when the vacant space (outage) is charged with a nonflammable nonliquefied compressed gas, the pressure in the cylinder or sphere at 130° F. (55° C.) must not exceed 5/4 the marked service pressure of the cylinder or sphere.

* * * * *

§§ 173.354–173.356 [Amended]

258. In §§ 173.354, 173.355, and 173.356 the word "chapter" is changed to read "subchapter".

259. § 173.357 is amended by changing the word "chapter" to read "subchapter"; the heading, the introductory text of paragraphs (b) and (c) and paragraph (b)(4) are revised; Note 1 following paragraph (b)(2) is deleted as follows:

§ 173.357 Chloropicrin and chloropicrin mixtures containing no compressed gas or Poison A liquid.

* * * * *

(b) *Chloropicrin and mixtures of chloropicrin containing no compressed gas or Poison A liquid.* Chloropicrin and mixtures of chloropicrin containing no compressed gas or Poison A liquid, in addition to containers prescribed in paragraph (a) of this section, when offered for transportation by carriers by rail freight, highway, or water, may be shipped in specification containers as follows:

* * * * *

(2) * * *

Note 1: [Deleted.]

* * * * *

(4) Specification 106A500X (§§ 179.300, 179.301 of this subchapter) tanks. Valves must be protected by metal caps. Tanks must not be equipped with safety devices of any type. Outage must be sufficient to prevent tanks from becoming liquid full at 130° F. (55° C.). (See § 177.834(m) of this subchapter for special requirements for highway shipments.)

(c) Chloropicrin and mixtures of chloropicrin containing no compressed gas or Poison A liquid, must be packaged as follows:

* * * * *

260. In § 173.358 is amended by changing the word "chapter" to read "subchapter"; the Heading and paragraph (a) are revised to read as follows:

§ 173.358 Hexaethyl tetraphosphate, methyl parathion, organic phosphorous compound, n.o.s., parathion, tetraethyl dithio pyrophosphate, and tetraethyl pyrophosphate, liquid.

(a) Hexaethyl tetraphosphate, methyl parathion, organic phosphorous compound, n.o.s., parathion, tetraethyl dithio pyrophosphate, and tetraethyl pyrophosphate, liquid must be packed in specification containers as follows:

261. § 173.359 is amended by changing the word "chapter" to read "subchapter", the heading and paragraph (c) are revised to read as follows:

§ 173.359 Hexaethyl tetraphosphate mixtures; methyl parathion mixtures; organic phosphorus compound mixtures, n.o.s.; organic phosphate compound mixtures n.o.s.; parathion mixtures; tetraethyl dithio pyrophosphate mixtures; and tetraethyl pyrophosphate mixtures, liquid (includes solutions, emulsions, or emulsifiable liquids).

* * * * *

(c) Hexaethyl tetraphosphate mixtures, methyl parathion mixtures, organic phosphorus compound mixtures, n.o.s., organic phosphate compound mixtures, n.o.s., parathion mixtures, tetraethyl dithio pyrophosphate mixtures, and tetraethyl pyrophosphate mixtures (solutions, emulsions, or emulsifiable liquids) containing not more than 25 percent hexaethyl tetraphosphate, methyl parathion, organic phosphate compound mixtures, n.o.s., parathion, tetraethyl dithio pyrophosphate, or tetraethyl pyrophosphate by weight, in inside metal containers not over 8 fluid ounces capacity each, packed in strong outside containers together with sufficient absorbent material to completely absorb the liquid in the event of leakage, are expected from specification packaging requirements of this Part.

§ 173.360 [Amended]

262. In § 173.360 the word "chapter" is changed to read "subchapter".

263. § 173.361 is amended by changing the word "chapter" to read "subchapter"; paragraph (b) is deleted as follows:

§ 173.361 Aldrin mixtures, liquid, with more than 60 percent aldrin.

* * * * *

(b) [Deleted]

§§ 173.362—173.362a [Amended]

264. In §§ 173.362 and 173.362a the word "chapter" is changed to read "subchapter".

265. In § 173.363 the heading is revised to read as follows:

§ 173.363 General packaging requirements for Poison B solids.

* * * * *

266. § 173.364 is revised to read as follows:

§ 173.364 Limited quantities of Poison B solids.

(a) Unless otherwise excluded by paragraph (3) of this section, limited quantities of Poison B solids for which exceptions are permitted as noted by reference to this section in § 172.101 of this subchapter are excepted from specification packaging requirements of this part if in tightly closed, inside packaging securely cushioned when necessary to prevent breakage as follows:

(1) In inside glass, earthenware, or composition bottles or jars, or metal containers, or lock-corner sliding-lid wooden boxes, of not over 5 pounds capacity each; or chipboard, pasteboard, or fiber cartons, cans, boxes, or tightly closed strong plastic bags or bottles compatible with product of not over 1 pound capacity each, packed in outside wooden or fiber board boxes, or wooden barrels or kegs. Net weight of contents of outside container not over 100 pounds.

(2) In inside chipboard, pasteboard, or fiber cartons, cans, or boxes, of not over 5 pounds capacity each, packed in outside fiberboard or wooden boxes. Not more than 6 of these cartons may be packed in any outside container.

(3) The following materials are excluded from this exemption: cyanides

(other than as specified in 173.370 (b) and (d)), hexaethyl tetraphosphate mixtures, methyl parathion mixtures, and organic phosphate mixtures, n.o.s.

(b) Special exceptions for shipment of certain drugs in the ORM–D class are prescribed in Subpart N of this part.

267. § 173.365 is amended by changing the word "chapter" to read "subchapter". The heading, the introductory text of paragraph (a) and paragraph (a)(15) are revised to read as follows:

§ 173.365 Poison B solids not specifically provided for.

(a) Poison B solids, as defined in § 173.343, other than those for which special requirements are prescribed, must be packaged as follows:

* * * * *

(15) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes constructed of at least 275-pound test double-faced fiberboard and provided with a perimeter liner and bottom pad of at least 200-pound test fiberboard. Boxes constructed of at least 350-pound fiberboard having top and bottom pads need not have a perimeter liner. Product must be contained within a tightly closed polyethylene or other equally efficient plastic bag constructed of material having a minimum thickness of 0.004-inch. Not more than 25 pounds net weight of product may be packed in one outside box. Not authorized for transportation by air.

* * * * *

268. In § 173.367 paragraphs (a)(2) through (a)(6) and paragraph (b)(2) are revised to read as follows:

§ 173.367 Arsenical compounds, n.o.s.; arsenate of lead; calcium arsenate; Paris green; and arsenical mixtures.

(a) * * *

(2) Specification 36A or 36B (§§ 178.230, 178.233 of this subchapter). Triplex bags. Authorized only for arsenical insecticides and fungicides containing 10 percent or less of arsenic trioxide. Not authorized for transportation by air.

(3) Specification 44B (§ 178.236 of this subchapter). Multiwall paper bags with inside paper bags, specification 2D (§ 178.23 of this subchapter). Net weight not over 50 pounds each. Not authorized for transportation by air.

(4) Specification 44C (§ 178.237 of this subchapter). Multiwall paper bags. For carload and truckload shipments only. Net weight not over 50 pounds each.

(5) Specification 44D (§ 178.238 of this subchapter). Multiwall paper bags. Where extensible Kraft is used the minimum total basis weight must be 260 pounds and the outer wall may be no less than 60 pounds basis weight. Net weight not over 50 pounds each. Not authorized for transportation by air.

(6) Specification 44E (§ 178.239 of this subchapter). Multi-wall paper bags constructed with minimum total basis weight of 160 pounds. For carload or truckload shipments only by rail or highway transportation; loaded by the consignor and unloaded by the consignee or his duly authorized agent. Net weight not over 50 pounds each. Where extensible Kraft is used, the minimum total basis weight for 40-pound net weight bags must be 190 pounds and for 20-pound net weight bags it must be 150 pounds. Not authorized for transportation by air or water.

(b) * * *

(2) Specification 44B (§ 178.236 of this subchapter). Paper bags with two added inside thicknesses of No. 1 Kraft paper one sheet having a Mullen test of 50 and the other sheet having a Mullen test of 40. Net weight not over 50 pounds each. Not authorized for transportation by air.

269. In § 173.368 paragraphs (a) and (b) are revised to read as follows:

§ 173.368 Arsenical dust, arsenical flue dust, and other poisonous noncombustible by-product dusts; also arsenic trioxide, calcium arsenate, and sodium arsenate.

(a) Arsenic dust, arsenical flue dust, and other poisonous noncombustible by-product dusts from metal recovery operations not subject to dangerous spontaneous heating, and arsenic trioxide, calcium arsenate, or sodium arsenate, when delivery is made to plants with private sidings only, may, in addition to packagings prescribed in § 173.367, be shipped in bulk in the following kinds of cars, if those cars are assigned exclusively to this type of service;

(1) Sift-proof; self-clearing, hopper or bottom outlet steel cars.

(2) Sift-proof, all steel flat bottom gondola cars with fixed sides and ends equipped with waterproof and dustproof wooden or steel covers well secured in place for all openings, and;

(3) Sift-proof box cars of all steel construction.

(b) Cars assigned exclusively to this service must be marked "ARSENICAL SERVICE ONLY," in addition to other required markings, and are not subject to § 174.615 of this subchapter while in that service.

270. § 173.369 is amended by changing the word "chapter" to read "subchapter"; paragraph (a)(11) and the introductory text of paragraph (b) are revised to read as follows:

§ 173.369 Carbolic acid (phenol), not liquid.

(a) * * *

(11) Specification 37A or 37B (§§ 178.131, 178.132 of this subchapter). Metal drums (single-trip). Not authorized for transportation by air.

* * * * *

(b) Carbolic acid (phenol), not liquid, in tightly closed inside packagings, securely cushioned when necessary to prevent breakage and packaged as follows, is excepted from the specification packaging requirements of this part.

* * * * *

271. § 173.370 is amended by changing the word "chapter" to read "subchapter"; the heading, the introductory text of paragraphs (a), (b) and (d) and paragraphs (a)(8) and (12), and (b)(3) are revised to read as follows:

§ 173.370 Cyanides and cyanide mixtures, dry.

(a) Cyanides and cyanide mixtures, dry, except cyanide of calcium and mixtures thereof, unless otherwise provided for in this section, if containing the cyanide equivalent of 10 percent or more of potassium cyanide, must be packaged as follows:

* * * * *

(8) Specification 45B (§ 178.240 of this subchapter). Bags, cloth, and paper, lined. Authorized only for sodium cyanides of globular or pellet form, diameter not less than ¾-inch. Net weight not over 100 pounds. Not authorized for transportation by air.

* * * * *

(12) Specification 12B (§ 178.205 of this subchapter). Fiberboard boxes constructed of at least 275-pound test double-faced fiberboard and provided with a perimeter liner and bottom pad of at least 200-pound test fiberboard. Boxes constructed of at least 350-pound fiberboard having top and bottom pads may not require perimeter liner. Products must be contained within a tightly closed polyethylene or other equally efficient plastic container constructed of material having minimum thickness of 0.004-inch. Not more than 25 pounds net weight of product may be packed in one outside box. Not authorized for transportation by air.

* * * * *

(b) *Exceptions for cyanides, and cyanide mixtures, except cyanide of calcium and mixtures thereof.* Cyanides and cyanide mixtures, except cyanide of calcium and mixtures thereof, when described and packaged as follows, are excepted from the specification packaging requirements of this Part:

* * * * *

(3) Cyanides of copper, zinc, lead, and silver are excepted from all packaging requirements except §§ 173.24 and 173.363.

* * * * *

(d) *Exceptions for cyanide of calcium and mixtures thereof.* Cyanide of calcium and mixtures thereof, when described and packaged as follows, are excepted from the specification packaging requirements of this Part.

* * * * *

272. § 173.371 is revised to read as follows:

§ 173.371 Dinitrobenzol (dinitrobenzene).

(a) Dinitrobenzol must be packaged as follows:

(1) As prescribed in § 173.346 or 173.365 according to its physical form at 130° F. (55° C.).

§ 173.372 [Amended]

273. In § 173.372 the word "chapter" is changed to read "subchapter".

274. In § 173.373 the heading and paragraph (a)(4) are revised to read as follows:

§ 173.373 Ortho-nitroaniline and para-nitroaniline.

(a) * * *

* * * * *

(4) In addition to specification containers prescribed in this section, paranitroaniline may be shipped by highway in bulk in strong, water-tight, metal bodied covered hopper motor vehicles.

§ 173.374 [Amended]

275. In § 173.374 the word "chapter" is changed to read "subchapter".

276. § 173.375 is amended by changing the word "chapter" to read "subchapter"; Note 1 following paragraph (a)(1) is deleted as follows:

§ 173.375 Sodium azide.

(a) * * *

(1) * * *

NOTE 1: [Deleted].

277. In § 173.376 paragraph (b) is deleted as follows:

§ 173.376 Aldrin and aldrin mixtures, dry, with more than 65 percent aldrin.

* * * * *

(b) [Deleted.]

278. § 173.377 is amended by changing the word "chapter" to read "subchapter"; the heading and the intro text of paragraphs (a), (b) and paragraphs (f), (g), (h) and (i) are revised to read as follows:

§ 173.377 Hexaethyl tetraphosphate mixtures; methyl parathion mixtures; organic phosphorus compound mixtures, n.o.s.; organic phosphate compound mixtures, n.o.s.; parathion mixtures; tetraethyl dithio pyrophosphate mixtures; and tetraethyl pyrophosphate mixtures, dry.

(a) Hexaethyl tetraphosphate mixtures, methyl parathion mixtures, organic phosphorus compound mixtures, n.o.s. organic phosphate compound mixtures, n.o.s., parathion mixtures, tetraethyl dithio pyrophosphate mixtures, and tetraethyl pyrophosphate mixtures in which the liquid is absorbed in concentrations greater than 2 percent but not exceeding 27 percent in an inert dry material so as to form a dry mixture, must be packed in specification containers as follows:

* * * * *

(b) Hexaethyl tetraphosphate mixtures, methyl parathion mixtures, organic phosphorus compound mixtures, n.o.s., organic phosphate compound mixtures, n.o.s., parathion mixtures, tetraethyl dithio pyrophosphate mixtures, and tetraethyl pyrophosphate mixtures in which the liquid is absorbed in concentrations greater than 27 percent in an inert dry material so as to form a dry mixture, must be packed in specification containers as follows:

* * * * *

(f) Dry mixtures containing not more than 2 percent by weight of hexaethyl tetraphosphate, methyl parathion, organic phosphorus compound mixtures, n.o.s., organic phosphate compound mixtures, n.o.s., parathion, tetraethyl dithio pyrophosphate, or tetraethyl pyrophosphate and in which the liquid is absorbed in an inert material, are excepted from specification packaging requirements of this part.

(g) Dry mixtures containing more than 2 percent but not exceeding 15 percent by weight of hexaethyl tetraphosphate, methyl parathion mixtures, organic phosphorus compound mixtures, n.o.s., organic phosphate compound mixtures, n.o.s., parathion, tetraethyl dithio pyrophosphate, or tetraethyl pyrophosphate, and in which the liquid is absorbed in an inert material, in addition to containers prescribed in paragraphs (a) and (b) of this section, may be packed in specification containers as follows:

(1) Spec. 44B (§ 178.236 of this chapter). Multiwall paper bags with inside paper bags, spec. 2D (§ 178.23 of this chapter), not over 5 pounds capacity each. Net weight of material in outside container not over 30 pounds each. Not authorized for transportation by air.

* * * * *

(h) Dry mixtures containing more than 2 percent but not exceeding 5 percent by weight of hexaethyl tetraphosphate, methyl parathion mixtures, organic phosphorus compound mixtures, n.o.s., organic phosphate compound mixtures, n.o.s., parathion, tetraethyl dithio pyrophosphate, or tetraethyl pyrophosphate, and in which the liquid is absorbed in an inert material, in addition to containers prescribed in paragraphs (a), (b), and (g) of this section, may be packed in specification containers as follows:

(1) Spec. 44D (§ 178.238 of this chapter). Multiwall paper bags not over 50 pounds net weight each. Where extensible kraft is used the minimum total basis weight shall be 260 pounds. Not authorized for transportation by air.

(i) Dry mixtures containing more than 2 percent but not exceeding 12 percent by weight of hexaethyl tetraphosphate, methyl parathion mixtures, organic phosphorus compound mixtures, n.o.s., organic phosphate compound mixtures, n.o.s., parathion, tetraethyl dithio pyrophosphate or tetraethyl pyrophosphate, and in which the liquid is absorbed in an inert material, in addition to containers prescribed in paragraphs (a), (b), and (g) of this section, may be packed in specification containers as follows:

(1) Spec. 44D (§ 178.238 of this chapter). Multiwall paper bags not over 50 pounds net weight each. Outer ply to be not less than 60 pounds basis weight. Not authorized for transportation by air.

279. § 173.379 is revised to read as follows:

§ 173.379 Cyanogen bromide.

Cyanogen bromide must be packaged in tightly closed metal inside containers not over 1-pound capacity each, securely cushioned and packaged in an outside wooden box. Net weight may not exceed 25 pounds in one outside packaging.

280. In § 173.381 the heading and paragraph (b) are revised; paragraph (c) is redesignated as paragraph (d); a new paragraph (c) and paragraph (e) are added to read as follows:

§ 173.381 Irritating materials; Definition and general packaging requirements.

* * * * *

(b) *Cushioning.* All packagings must be hermetically closed. Inside packagings must be cushioned as prescribed when necessary to prevent breakage or leakage.

(c) *Outage.* No packaging used for the transportation of any liquid irritating material may be completely filled. For packagings with a capacity of 110 gallons or less, sufficient outage must be provided so the packaging will not be liquid full at 130° F. (55° C.).

(d) The transportation of an irritating material is not permitted if there is any type of interconnection between packagings.

(e) Any pressure in a cylinder at 130° F. (55° C.) must not exceed ⅝ the marked service pressure of the cylinder.

281. § 173.382 is amended by changing the word "chapter" to read "subchapter"; the introductory text of paragraph (a) and paragraph (b) are revised to read as follows:

§ 173.382 Irritating materials, not specifically provided for.

(a) Irritating materials, as defined in § 173.381 for which special packaging is not otherwise prescribed, except as provided in paragraph (b) of this section, must be packaged as follows:

* * * * *

(b) Chloroacetophene, diphenylaminechloroarsine, irritating material, n.o.s., or xylyl bromide, charged with a nonflammable gas exceeding 25 psig at 70° F. must be packaged as specified in paragraph (a)(4) of this section.

§ 173.384 [Reserved]

282. § 173.384 is deleted.

§§ 173.385–173.387 [Amended]

283. In §§ 173.385, 173.386 and 173.387 the word "chapter" is changed to read "subchapter".

§§ 173.389–173.398 [Amended]

284. In §§ 173.389 through 173.398 the word "chapter" is changed to read "subchapter".

§ 173.399 [Reserved]

285. § 173.399 is deleted.

286. Subpart I Heading is revised to read as follows:

Subpart I—Special Requirements for Certain Rail Shipments or Movements

§§ 173.400–173.417 and §§ 173.420–173.422 [Removed]

287. §§ 173.400 through 173.417 and §§ 173.420 through 173.422 are deleted.

§ 173.425 [Reserved]

288. § 173.425 is deleted.

289. § 173.426 is revised (except the placard) to read as follows:

§ 173.426 Cars, truck bodies or trailers containing lading which has been fumigated or treated with flammable liquids flammable gases, poisonous liquids or solids, or poisonous gases.

(a) Delivery of rail cars, freight container, or trailers containing lading, fumigated or treated with flammable liquid or flammable gas for transportation by rail carrier is prohibited until 48 hours have elapsed after such fumigation or treatment, or until cars, truck bodies or trailers have been ventilated so as to remove danger of fire or explosion due to the pressure of flammable vapors.

(b) Rail cars, truck bodies or trailers containing lading which has been fumigated or treated with poisonous liquid, solid, or gas, such as carbolic acid, liquid or solid, chlorpicrin, hydrocyanic acid, methyl bromide, etc., must be placarded on each door or near thereto with placard as described below (for cleaning cars see section 174.615 of this subchapter):

(PLACARD REMAINS THE SAME)

§§ 173.427, 173.430 and 173.431 [Reserved]

290. §§ 173.427, 173.430, and 173.431 are deleted.

291. § 173.432 is amended by changing the word "chapter" to read "subchapter"; paragraphs (a) and (e) are revised to read as follows:

§ 173.432 Tank car shipments.

(a) Tank cars containing any flammable poison gas or flammable liquid, except liquid road asphalt or tar, must not be offered for shipment unless originally consigned or subsequently reconsigned to parties having private-siding (see Note 1 of this section) or to parties using railroad siding facilities which have been equipped for piping the liquid from tank cars to permanent storage tanks of sufficient capacity to receive contents of car.

* * * * *

(e) Flammable liquids and flammable compressed gases may not be loaded into tank cars on carrier property from tank trucks, or drums.

* * * * *

292. Subpart I is deleted.

293. A new Subpart J is added to read as follows:

Subpart J—Other Regulated Material; Definition and Preparation

§ 173.500 Definitions.

(a) For the purpose of this subchapter, an Other Regulated Material (ORM) A, B, or C is any material that does not meet the definition of a hazardous material, other than a combustible liquid in packagings having a capacity of 110 gallons or less, and is specified in § 172.101 as an ORM material or that possesses one or more of the characteristics described in the following groups.

NOTE 1: An ORM with a flash point of 100° to 200° F. when transported with more than 110 gallons in one container shall be classed as a combustible liquid.

(1) An ORM–A material is a material which has an anesthetic, irritating, noxious, toxic, or other similar property and which can cause extreme annoyance or discomfort to passengers and crew in the event of leakage during transportation.

(2) An ORM–B material is a material (including a solid when wet with water) capable of causing significant damage to a transport vehicle or vessel from leakage during transportation. Materials meeting one or both of the following criteria are ORM–B materials:

(i) A liquid substance that has a corrosion rate exceeding 0.250 inch per year (IPY) on aluminum (nonclad 7075–T6) at a test temperature of 130° F. An acceptable test is described in NACE Standard TM–01–69.

(ii) Specifically designated by name in § 172.101 of this subchapter.

(3) An ORM–C material is a material which has other inherent characteristics not described as an ORM–A or ORM–B but which make it unsuitable for shipment, unless properly identified and prepared for transportation. Each ORM–C material is specifically named in § 172.101 of this subchapter.

(4) An ORM–D material is a material such as a consumer commodity which, though otherwise subject to the regulations of this subchapter, presents a limited hazard during transportation due to its form, quantity and packaging. They must be materials for which exceptions are provided in § 172.101 of this subchapter. A shipping description applicable to each ORM–D material or category of ORM–D materials is found in § 172.101 of this subchapter.

§ 173.501 Other Regulated Material (ORM); application.

Persons offering materials classed as ORM–A, B, C, or D for transportation are subject to the regulations in this subchapter when they offer these materials for transportation.

§ 173.505 Exceptions for Other Regulated Material (ORM).

(a) The following ORM materials, unless otherwise provided in § 172.101 of this subchapter, are not subject to the requirements of this subchapter, except §§ 173.6 and 173.24 and Subparts C and D of Part 172, when packages as follows:

(1) ORM—A, B, or C liquid, not over one pint in one packaging;

(2) ORM—A or B solid, not over five pounds in one packaging;

(3) ORM—C solid, not over twenty-five pounds in one packaging.

§ 173.510 General packaging requirements.

(a) Except as provided in § 173.505, ORM materials must be prepared for shipment in compliance with the following:

(1) Each material must be offered for transportation and transported in compliance with Subparts B, C, and D of Part 172 of this subchapter and Subpart A of Part 173.

(2) For packagings of 110 gallon capacity or less, sufficient outage (ullage) must be provided so the packaging will not be liquid full at 130° F. (55° C.).

(3) When a liquid or solid has an absolute vapor pressure exceeding 16 p.s.i. at 100° F. (38° C.), the primary packaging must be capable of withstanding the inside vapor pressure at 130° F. without leakage.

(4) Any material classed as an ORM material, which may cause a hazard in transportation due to its reaction with water, must be packaged with either an inner or outer water proof packaging.

294. A new Subpart K is added to read as follows:

Subpart K—Other Regulated Material; ORM–A

§ 173.605 Ammonium hydrosulfide solution, ammonium polysulfide solution, bromochloromethane, dibromodifluoromethane, dichlorodifluoroethylene; dichloromethane, methyl chloroform, perfluoro-2-butene, tetrachloroethylene, and trichloroethylene.

(a) Ammonium hydrosulfide solution, ammonium polysulfide solution, bromochloromethane, dibromodifluoromethane, dichlorodifluoroethylene, dichloromethane, methyl chloroform, perfluoro-2-butene, tetrachloroethylene, and trichloroethylene, when offered for transportation on a passenger-carrying aircraft, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Wooden box with inside earthenware, glass, metal, or plastic packagings of not more than 2 gallons capacity each, with sufficient cushioning and absorbent material to prevent breakage and leakage.

(2) Fiberboard box with inside earthenware, glass, metal, or plastic packagings of not more than 1 gallon capacity each, with sufficient cushioning and absorbent material to prevent breakage and leakage.

(3) Metal drum of not more than 10 gallons capacity.

(4) Outside packaging with inside earthenware, glass, plastic, or metal packagings of not more than 4 fluid ounces capacity each, with sufficient cushioning and absorbent material to prevent breakage and leakage. The maximum amount that may be shipped in any one outside packaging is 5 gallons.

§ 173.615 Carbon dioxide, solid (dry ice).

(a) Solid carbon dioxide, when offered for transportation by aircraft or water, must be packed in packaging designed and constructed to permit the release of carbon dioxide gas to prevent a build-up of pressure that could rupture the packaging. For each shipment by air, advance arrangements between the shipper and each carrier must be made.

(b) Railroad cars and motor vehicles containing solid carbon dioxide, when accepted for transportation on board ocean vessels, must be conspicuously

marked on two sides "WARNING—CO_2 SOLID (DRY ICE)."

(c) Other packagings, when accepted for transportation on board ocean vessels, must be marked "CARBON DIOXIDE, SOLID—DO NOT STOW BELOW DECKS."

(d) Not more than 440 pounds of solid carbon dioxide may be transported in any one cargo pit or bin on any aircraft except by specific and special arrangement between the shipper and the aircraft operator.

§ 173.620 Carbon tetrachloride, ethylene dibromide (1,2-dibromoethane), and tetrachloroethane.

(a) Carbon tetrachloride, ethylene dibromide, and tetrachloroethane, when offered for shipment by cargo-only aircraft and water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) As prescribed in §§ 173.344, 173.345 or 173.346, meeting the packaging requirements applicable to Poison B liquids.

(2) Uniform Freight Classification (UFC), Rule 40, Section 5. Metal barrel or drum, not over 55 gallons capacity. Not authorized for transportation by air.

(3) Wooden box with inside containers, not over 200 pounds gross weight. Not authorized for transportation by air.

(4) Uniform Freight Classification (UFC), Rule 41, Sections 2 and 3. Fiberboard box, with inside containers, not over 90 pounds gross weight. Not authorized for transportation by air.

(5) Tank cars or motor vehicle tank trucks. Not authorized for transportation by air.

(b) Carbon tetrachloride, ethylene dibromide, and tetrachloroethane, when offered for shipment by passenger-carrying aircraft, must be prepared for shipment in compliance with § 173.510 and must be packaged to meet the packaging requirements of § 173.345.

§ 173.630 Chloroform.

(a) Chloroform, when offered for transportation by aircraft, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Wooden box with inside earthenware, glass, metal, or plastic packaging of not more than 2 gallons capacity each.

(2) Fiberboard box with inside earthenware, glass, metal, or plastic packaging of not more than 1 gallon capacity each.

(3) Metal drum, not over 55 gallons capacity.

(4) Outer packaging with inside earthenware, glass, metal, or plastic packagings of not more than 4 fluid ounces capacity each, not exceeding 5 gallons total content.

(b) Chloroform, when offered for shipment by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) As prescribed in § 173.344, 173.345 or 173.346 meeting the packaging requirements applicable to Poison B liquids.

(2) Uniform Freight Classification (UFC), Rule 40, Section 5. Metal barrel or drum, not over 55 gallons capacity.

(3) Wooden box with inside containers, not over 200 pounds gross weight.

(4) Uniform Freight Classification (UFC), Rule 41, Section 2 and 3. Fiberboard box with inside containers, not over 90 pounds gross weight.

§ 173.635 Ferrophosphorus.

(a) Ferrophosphorus, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Steel barrel or drum;

(2) Wooden barrel or keg;

(3) Wooden box with inside container; or

(4) Sift-proof railroad freight car.

§ 173.645 Ferrosilicon.

(a) Ferrosilicon, containing 30 percent or more but not more than 70 percent silicon, when offered for shipment by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Steel barrel or drum;

(2) Wooden barrel or keg; or

(3) Wooden box, not over 500 pounds gross weight.

(b) Ferrosilicon, containing 30 percent or more but not more than 70 percent silicon, when offered for shipment by cargo-only aircraft must be prepared for shipment in compliance with §§ 173.510 and 173.154.

§ 173.650 Hexachloroethane.

(a) Hexachloroethane, when offered for shipment by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) As prescribed in §§ 173.344, 173.345 or 173.346, meeting the packaging requirements applicable to Poison B liquids.

(2) Uniform Freight Classification (UFC), Rule 40, Section 5. Metal barrel or drum, not over 55 gallons capacity each.

(3) Wooden box with inside containers, not over 200 pounds gross weight.

(4) Uniform Freight Classification (UFC), Rule 41, Sections 2 and 3. Fiberboard box with inside containers, not over 90 pounds gross weight.

§ 173.655 Naphthalene or naphthalin.

(a) Naphthalene or naphthalin, when offered for shipment by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Wooden barrel or keg;

(2) Wooden box;

(3) Fiberboard box;

(4) Metal barrel or drum; or

(5) Burlap (jute) bag, not over 224 pounds net weight. Authorized only when the melting point is 167° F. or higher.

(b) Naphthalene or naphthalin, when offered for shipment by cargo-only aircraft, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) As prescribed for passenger-carrying aircraft in paragraph (c) of this section, or

(2) As prescribed in § 173.154.

(c) Naphthalene or naphthalin, when offered for transportation by passenger-carrying aircraft, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Earthenware, glass, metal, or plastic inside packagings of not more than 5 pounds capacity each, in strong outside packaging not over 25 pounds net weight.

295. A new Subpart L is added to read as follows:

Subpart L—Other Regulated Material; ORM-D

§ 173.800 Ammonium hydrogen fluoride, ammonium hydrogen sulfate, ammonium fluoride, barium oxide, chloroplatinic acid, copper chloride, ferric chloride lead chloride, molybdenum pentachloride, potassium hydrogen sulfate, sodium aluminate, sodium hydrogen sulfate, and or sodium hydrogen sulfite, (each in solid form).

(a) Ammonium hydrogen fluoride, ammonium hydrogen sulfate, ammonium fluoride, barium oxide, chloroplatinic acid, copper chloride, ferric chloride, lead chloride, molybdenum pentachloride, potassium hydrogen sulfate, sodium aluminate, sodium hydrogen sulfate, or sodium hydrogen sulfite, when offered for transportation by passenger-carrying aircraft, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Earthenware, glass, metal, or plastic inside packagings of not more than 5 pounds net capacity each. Inside packagings must be packed in strong outside packaging, containing not more than 25 pounds net weight.

§ 173.850 Lime, unslaked; quicklime; and calcium oxide.

(a) Unslaked lime, quicklime, or calcium oxide when offered for transportation by cargo-only aircraft or water, must be prepared for shipment in compliance with § 173.510 and must be packed in waterproof packaging as follows:

(1) Steel barrel or drum;

(2) Wooden barrel or keg;

(3) Wooden box;

(4) Multi-wall paper bag, not over 100 pounds net weight;

(5) Paper-lined burlap bag, not over 100 pounds net weight; or

(6) Sift-proof railroad freight car.

(b) Unslaked lime, quicklime, or calcium oxide, when offered for transportation by passenger-carrying aircraft, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Earthenware, glass, metal, or plastic inside packagings, of not more than 5 pounds net capacity each. Inside packagings must be packed in strong outside packaging, containing not more than 25 pounds net weight.

§ 173.860 Mercury, metallic.

(a) Except as limited by paragraphs (b) and (c) of this section, metallic mercury, when offered for transportation by aircraft, must be prepared for shipment

in compliance with § 173.510 and must be packaged as follows:

(1) Earthenware, glass, or plastic inside packagings of not more than 5 pounds capacity each packed in strong outside packagings. Either the inside or the outside packaging must have complete enveloping inner linings or bags of strong, leak-tight, and puncture resistant material impervious to mercury.

(2) Iron or steel flasks packed in outside packagings. Either the inside or the outside packaging must have completely enveloping inner linings or bags of strong, leak-tight, and puncture resistant material impervious to mercury.

(b) Manufactured devices of which mercury is a component part (except tubes as described in paragraph (c) of this section) packed in outside packagings having completely enveloping inner linings or bags of strong, leak-tight, and puncture resistant material impervious to mercury, may be transported by aircraft if prepared for shipment in compliance with § 173.510.

(1) Mercurial barometers, complying with this paragraph, which are loaded and unloaded from an aircraft under the supervision of and are accompanied in flight by a United States Weather Bureau official, or similar United States agency official are excepted from any other requirements of this subchapter.

(c) Electron tubes, vapor tubes, and similar tubes of which mercury is a component part, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) In outside packaging with all seams and joints sealed with self-adhesive, pressure-sensitive tape which will prevent the escape of mercury from the outside packagings; authorized only if the item contains not over one pound (454 grams) of mercury.

(2) In outside packaging having completely enveloping inner linings or bags of strong, leak-tight, and puncture resistant material impervious to mercury.

(3) In manufacturer's original packaging if each item does not contain more than 0.18-ounce (5 grams) of mercury per tube, and if the outside package does not contain more than 1.1 ounces (30 grams) total net quantity.

(4) In the manufacturer's original packagings if tubes are completely jacketed in sealed leak-tight metal cases.

296. A new Subpart M is added to read as follows:

Subpart M—Other Regulated Material; ORM–C

§ 173.910 Ammonium sulfate nitrate.

(a) Ammonium sulfate nitrate, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Steel barrel or drum;

(2) Wooden barrel or keg;

(3) Wooden box with inside packagings;

(4) Fiberboard box with inside packagings, not over 90 pounds gross weight;

(5) Fiber drum, not over 150 pounds gross weight; or

(6) Paper bag, not over 200 pounds net weight, moisture, and sift-proof, of strength not less than the equivalent of bags made of 8-ounce burlap.

§ 173.915 Battery parts.

Battery parts, when exhausted and unwashed, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packed in a metal or wooden barrel with sufficient absorbent material to absorb any liquid present in the parts.

§ 173.920 Bleaching powder.

(a) Bleaching powder (or chlorinated lime) containing less than 39 percent available chlorine, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Steel barrel or drum;

(2) Wooden barrel or keg;

(3) Wooden or fiberboard box, with inside containers; or

(4) Fiber drum with inside metallic or polyethylene liner, not over 275 pounds gross weight.

§ 173.925 Box toe board.

(a) Box toe board, nitrocellulose base, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Wooden box, not over 350 pounds gross weight;

(2) Fiber tube, not over 25 pounds gross weight;

(3) Fiber drum, not over 200 pounds gross weight; or

(4) Fiberboard box, not over 90 pounds gross weight.

§ 173.930 Burlap bags, used and unwashed or not cleaned.

(a) Burlap bags, used and not cleaned, when offered for shipment by water, must be packed in tight bales bound with rope, wire, or other similar means.

(b) Burlap bags used for the shipment of any hazardous material and not cleaned may not be transported by air.

§ 173.931 Burlap cloth, burlap bags, new, used, and washed, or vacuum cleaned, wheel cleaned, or otherwise mechanically cleaned.

(a) Burlap cloth or new, used, and washed, or cleaned burlap bags when offered for transportation by air or by water, must be packaged as follows:

(1) In tight bales, bound with wire, metal hoops, rope, rattan, or withes.

(2) Tight bundles, bound with rope, wire, or other similar means.

(3) Wooden barrel or box.

§ 173.945 Calcium cyanamide, not hydrated.

(a) Calcium cyanamide, not hydrated, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Steel barrel or drum; or

(2) Wooden barrel or keg:

(b) Calcium cyanamide, not hydrated, when offered for transportation by cargo-only aircraft, must be prepared for shipment in compliance with §§ 173.510 and 173.154.

(c) Calcium cyanamide, not hydrated, when offered for transportation by passenger-carrying aircraft, must be prepared for shipment in compliance with § 173.510 and must be packed in earthenware, glass, metal, or plastic inside packagings of not over 1 pound each, adequately cushioned to prevent breakage and leakage. Inside packagings must be packed in a strong outside package containing not more than 25 pounds each.

§ 173.948 Camphene.

(a) Camphene, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged in a wooden barrel, keg, or box.

(b) Camphene, when offered for transportation by air, must be prepared for shipment in compliance with § 173.510 and must be packaged as prescribed in § 173.154.

§ 173.952 Castor beans and castor pomace.

(a) Castor beans and castor pomace, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Sift-proof, five-ply paper bag, not over 100 pounds net weight.

(2) Sift-proof, paper or plastic lined burlap bag, not over 100 pounds net weight.

(3) Sift-proof, paper or plastic lined cotton bag, not over 100 pounds net weight.

§ 173.955 Coconut meal pellets.

(a) Coconut meal pellets which contain at least 6 percent water, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Burlap (jute) bag;

(2) Multi-wall paper bag; or

(3) Polyethylene-lined burlap or paper bag.

§ 173.960 Copra.

Copra, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged in a burlap bag.

§ 173.965 Cotton and other fibers.

Cotton and the fibers jute, hemp, flax, sisal, coir, kapok, or similar vegetable fibers, when offered for transportation by water, must be packaged in bales, securely and tightly bound with rope, wire, or other similar means.

§ 173.970 Cotton batting, batting dross, wadding, seed hull fiber, shavings, pulp, and cut linters.

(a) Except as provided in paragraphs (b) and (c) of this section, cotton batting, batting dross, wadding, seed hull fiber, shavings, pulp, and cut linters, when offered for transportation by water, must be packaged as follows:

(1) Bales, covered with bagging on at least three-fourths of the bales surface, including both ends;
(2) Wooden barrel;
(3) Wooden box; or
(4) Burlap bag, tightly compressed.

(b) Cotton batting, batting dross, and wadding, when packaged in a wooden, fiberboard, or metal packaging, are not subject to any other requirements of this subchapter.

(c) Cut cotton linters may be packed in a bale, covered on the soft sides only, if the bale is compressed to a density of not less than 32 pounds per cubic foot and is bound with six or more bands.

§ 173.975 Cotton sweepings; and textile, cotton, felt, or wool waste.

(a) Cotton sweepings, and textile, cotton felt, or wool waste, when offered for transportation by water, must be packaged as follows:

(1) Bales, covered with bagging on at least three-fourths of the bale surface, including both ends.

(2) Burlap bag, tightly compressed.

§ 173.980 Excelsior.

Excelsior, when offered for transportation by water, must be packaged in a bale, tightly bound with wire or metal hoops.

§ 173.985 Exothermic ferrochrome, ferromanganese, and silicon-chrome.

Exothermic ferrochrome, ferromanganese, and silicon-chrome, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged in a steel barrel or drum, not over 750 pounds gross weight.

§ 173.990 Feed, wet, mixed.

Mixed, wet feed, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged in a burlap (jute) bag or in bulk, in a rail car.

§ 173.995 Fish scrap and fish meal.

(a) Except as provided in paragraph (b) of this section, fish scrap and fish meal, containing at least 6 percent but not more than 12 percent water, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Burlap (jute) bag;
(2) Multi-wall paper bag;
(3) Polyethylene-lined burlap or paper bag; or
(4) Rail car.

(b) Fish scrap and fish meal may not be offered for transportation if the temperature of the material exceeds 120° F. (49° C.).

§ 173.1000 Garbage tankage, rough ammoniate tankage, or tankage fertilizer.

Garbage tankage containing 8 percent or more water, rough ammoniate tankage containing 7 percent or more water, or tankage fertilizer containing 8 percent or more water, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged in a burlap (jute) bag or in bulk, in a rail car.

§ 173.1005 Hay or straw.

Hay or straw, when offered for transportation by water, must be packaged in a tightly bound bale.

§ 173.1010 Lead dross or scrap.

(a) Lead dross or scrap, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Steel barrel or drum;
(2) Wooden barrel or keg; or
(3) Wooden box.

§ 173.1020 Magnetized material.

(a) For the purpose of this subchapter, a substance is considered to be a magnetized material if, when packaged for transportation by air, it has a magnetic field strength of 0.002 gauss or more at a distance of 7 feet, from any point on the surface of the package, or which is of such mass that it could affect the aircraft instruments, particularly the compasses. When offered for transportation by air, magnetized material must be packaged as follows:

(1) Devices, such as magnetrons and light meters, must be packed so that the polarities of each unit oppose one another.

(2) Permanent magnets must have keeper bars installed, must be shielded, or the shipper specifically may arrange with the carrier for special stowage to prevent the magnetic field from causing compass deviation.

(3) Each package containing magnetized material must be marked "ORM-C", and bear the label described in § 172.446 of this subchapter.

(b) Any package which has a measurable magnetic field greater than 0.00525 gauss, when measured from any surface at a distance of 15 feet, must be shielded to reduce the reading to not greater than 0.00525 gauss before offering for shipment by air.

(c) For loading magnetized material aboard aircraft, see § 175.85 of this subchapter.

§ 173.1025 Metal borings, shavings, turnings or cuttings.

Metal borings, shavings, turnings, or cuttings, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged in a metal barrel or drum.

§ 173.1030 Oakum or twisted jute packing.

Oakum or twisted jute packing (treated or untreated), when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged in a bale, tightly bound with wire, rope, or other similar means, or in a fiberboard box.

§ 173.1035 Oiled material.

(a) Oiled material, when offered for transportation by air or water, must be properly dried to prevent spontaneous heating, including carbon paper treated with oxidizable oil, oiled clothing, oil, impregnated or coated with 5 percent or less of animal or vegetable oil, and must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) When the nature of the material permits, it must be tightly rolled or coiled, and wrapped or sealed with heavy paper.

(2) Fabricated articles not suitable for packagings as described in paragraph (a) (1) of this section, must be packed in sealed metal boxes or metal lined wooden boxes.

(3) Wooden or fiberboard box. Not authorized for transportation by air.

§ 173.1040 Pesticide, water-reactive.

Water reactive pesticide not otherwise subject to this subchapter, and including fungicides, herbicides, etc., which contain manganese ethylene bis-dithio carbamate, when offered for transportation by water, must be packaged in water resistant packaging in compliance with § 173.510.

§ 173.1045 Petroleum coke, uncalcined.

Uncalcined petroleum coke, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged in metal barrels or drums.

§ 173.1060 Rosin.

(a) Rosin (colophony), when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Steel barrel or drum;
(2) Wooden barrel or keg;
(3) Wooden box;
(4) Fiberboard box;
(5) Fiber drum;
(6) Burlap bag of at least 7½ ounces burlap, with water-proofed paper lining, not over 100 pounds net weight;
(7) Multi-wall paper bag, of at least 4-ply for not over 50 pounds net weight, or of at least 6-ply for not over 100 pounds net weight; or
(8) Uniform Freight Classification (UFC), Rule 40, Section 10. Multi-paper bag, at least 4-ply, not over 100 pounds net weight.

§ 173.1065 Rubber curing compound, solid.

(a) Solid rubber curing compounds, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Metal barrel or drum;
(2) Fiber drum;
(3) Wooden barrel or keg;
(4) Wooden or fiberboard box;
(5) Sift-proof multi-wall paper bag; or
(6) Sift-proof lined burlap bag.

§ 173.1070 Sawdust or wood shavings.

(a) Sawdust or wood shavings, when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:

(1) Steel barrel or drum;

(2) Wooden barrel or keg;
(3) Wooden or fiberboard box;
(4) Bag; or
(5) Bales, slatted and compactly bound with wire or metal bands.

§ 173.1075 Scrap paper or waste.

Scrap paper or waste, when offered for transportation by water, must be packaged in tight bales.

§ 173.1080 Sulfur.

(a) Sulfur, flowers of sulfur (sulfur flower), when offered for transportation by water, must be prepared for shipment in compliance with § 173.510 and must be packaged as follows:
(1) Metal barrel or drum;
(2) Wooden barrel or keg;
(3) Wooden or fiberboard box;
(4) Sift-proof multi-wall paper bag;
(5) Sift-proof paper-lined burlap bag; or
(6) Tight rail car.

§ 173.1085 Yeast, active (in liquid or compressed form).

(a) Yeast which will not generate gas in transit, or which is shipped in packagings where any gas which may develop can readily escape, is not subject to any other requirements of this subchapter.

(b) Any pressure vessel used must be equipped with a safety vent set to release gas at a maximum pressure of 25 p.s.i.g. when transported by air.

(c) Except for a material covered under paragraph (a) of this section, each shipping paper involving shipment by aircraft must indicate to the aircraft operator any special handling and refrigeration conditions necessary for safe transportation including instructions to the operator for handling and refrigeration in the event of delay en route.

297. A new Subpart N is added to read as follows:

Subpart N—Other Regulated Material; ORM–D

§ 173.1200 Consumer Commodity.

(a) In order to be transported under the proper shipping name of "consumer commodity," a material must meet that definition. It may be reclassed and offered for shipment as ORM–D material (See § 173.500) provided that a special exception is authorized in the specific section applicable to the material and that it is prepared in accordance with the following paragraphs. (The gross weight of each package must not exceed 65 pounds and each package offered for transportation aboard aircraft must meet the requirements of § 173.6).

(1) *Flammable Liquids must be:* (i) In inside metal containers, each having a rated capacity of 1 quart or less, packed in strong outside packagings;

(ii) In inside containers, each having a rated capacity of 1 pint or less, packed in strong outside packagings.

(iii) In inside containers, each having a rated capacity of one gallon or less, packed in strong outside packagings. The provisions of this exception apply only if the flash point of the material is 73° F. or higher.

(2) *Corrosive liquids must be:* (i) In bottles, each having a rated capacity of 1 pint or less, each enclosed in a metal can, packed in strong outside packagings.

(ii) In metal or plastic containers, each having a rated capacity of 1 pint or less, packed in strong outside packagings.

(3) *Corrosive solids* must be: (i) In earthenware, glass, plastic or paper containers each having a net weight of 5 pounds or less, packed in strong metal, wooden, or fiberboard outside packagings, each having a net weight of 25 pounds or less.

(ii) In metal, rigid fiber, or composition cans or cartons or rigid plastic containers each having a net weight of 10 pounds or less, packed in strong metal, wooden, or fiberboard outside packagings each having a net weight of 25 pounds or less.

(4) *Flammable solids* must be in inside containers each having a net weight of 1 pound or less, packed in strong outside packagings each having a net weight of 25 pounds or less.

(5) *Oxidizers* must be in inside containers each having a rated capacity of 1 pint or less for liquids or a net weight of 1 pound or less for solids, packed in strong outside packaging each having a net weight of 25 pounds or less.

(6) *Organic peroxides* must be; (i) In inside containers which must be securely packed and cushioned with noncombustible cushioning material. However, cushioning material is not required when the liquid is contained in strong, securely closed, plastic packagings, each having a rated capacity of 1 ounce or less by volume or of 1-ounce or less net weight.

(ii) In strong outside packagings of 24 or less inside fiberboard containers, each having 70 or less securely closed tubes having a maximum fluid capacity of ⅛-ounce each and securely packed in noncombustible cushioning material. Each fiberboard container may not contain more than 1 pint of liquid.

(7) *Poison B liquids or solids* must be in inside containers, each having a rated capacity of 8 ounces or less by volume for liquids or of 8-ounces or less net weight for solids packed in strong outside packagings.

(8) *Compressed gases* must be: (i) In inside containers, each having a water capacity of 4-fluid ounces or less (7.22 cubic inches or less), packed in strong outside packagings.

(ii) In inside container charged with a solution of materials and compressed gas or gases which is non-poisonous, meeting all of the following:

(A) Capacity may not exceed 50 cubic inches (27.7 fluid ounces);

(B) Pressure in the container may not exceed 180 p.s.i.g. at 130° F. (55° C.). If the pressure exceeds 140 p.s.i.g. at 130° F., (55° C.) but does not exceed 160 p.s.i.g. at 130° F., (55° C.) a specification DOT 2P (§ 178.33 of this subchapter) inside metal container must be used; if the pressure exceeds 160 p.s.i.g. at 130° F., (55° C.), a specification DOT 2Q (§ 178.33a of this subchapter) inside metal container must be used. In any event the metal container must be capable of withstanding, without bursting, a pressure of one and one-half times the equilibrium pressure of the contents at 130° F. (55° C.);

(C) Liquid content of the material and gas not completely fill the container at 130° F. (55° C.);

(D) The containers must be packed in strong outside packagings; and

(E) Each completed container filled for shipment must have been heated until the pressure in the container is equivalent to the equilibrium pressure of the content at 130° F. (55° C.) without evidence of leakage, distortion, or other defect.

(iii) In a non-refillable inside metal container of 50 cubic-inch capacity or less (27.7 fluid ounces), with foodstuffs or soaps and with soluble or emulsified compressed gas, provided the pressure in the container does not exceed 140 p.s.i.g. at 130° F. (55° C.). The metal container must be capable of withstanding, without bursting, a pressure of one and one-half times the equilibrium pressure of the contents at 130° F. (55° C.) and must comply with the following provisions:

(A) Containers must be packed in strong outside packagings, and

(B) Liquid content of the material and gas may not completely fill the container at 130° F. (55° C.).

(iv) In refillable inside metal containers with cream and soluble or emulsified compressed gas packed in strong outside packagings. Containers must be of such design that they will hold pressure without permanent deformation up to 375 p.s.i.g. and must be equipped with a device designed so as to release pressure without bursting of the container or dangerous projection of its parts at higher pressures.

(v) In non-refillable inside metal containers charged with a solution, containing biological products or a medical preparation which could be deteriorated by heat, and compressed gas or gasses which is nonpoisonous and nonflammable. The capacity of each container may not exceed 35 cubic inches (19.3 fluid ounces). The pressure in the container may not exceed 140 p.s.i.g. at 130° F. (55° C.), and the liquid content of the product and gas may not completely fill the container at 130° F. (55° C.). One completed container out of each lot of 500 or less, filled for shipment, must be heated, until the pressure in the container is equivalent to the equilibrium pressure of the content at 130° F. (55° C.). There may not be no evidence of leakage, distortion, or other defect. Container must be packed in strong outside packagings.

(vi) In electronic tubes, each having a volume of not more than 30 cubic inches and charged with gas to a pressure of not more than 35 p.s.i.g. and packed in strong outside packagings.

(vii) In an inside metal container as a component of an audible fire alarm system powered by a compressed gas meeting the following provisions:

(A) Each inside container must have contents which are not flammable, poisonous, or corrosive as defined under this Part;

(B) Each inside container may not have a capacity exceeding 35 cubic inches (19.3 fluid ounces);

(C) Each inside container may not have a pressure exceeding 70 p.s.i.g. at 70° F. (21° C.) and the liquid portion of the gas may not completely fill the inside container at 130° F. (55° C.);

(D) Each inside container must be designed and fabricated with a burst pressure of not less than five times its charged pressure or more at 130° F. (55° C.); and

(E) Each fire alarm system must be packed in a strong outside packaging.

298. A new Appendix D is added to Part 173 to read as follows:

APPENDIX D—METHOD OF TESTING CORROSION TO SKIN

1. Corrosion to the skin is measured by patch-test technique on the intact skin of the albino rabbit, clipped free of hair. A minimum of six subjects are to be used in this test.

2. Introduce under a square cloth patch, such as surgical gauze measuring 1 inch by 1 inch and two single layers thick, 0.5 milliliter (in the case of liquids) or 0.5 gram (in the case of solids and semisolids) of the substance to be tested.

3. Immobilize the animals with patches secured in place by adhesive tape.

4. Wrap the entire trunk of each animal with an impervious material, such as rubberized cloth, for the 4 hour period of exposure. This material is to aid in maintaining the test patches in position and retards the evaporation of volatile substances. It is not applied for the purpose of occlusion.

5. After 4 hours of exposure, the patches are to be removed and the resulting reactions are to be evaluated for corrosion.

6. Readings are again to be made at least at the end of a total of 48 hours (44 hours after the first reading).

7. Corrosion will be considered to have resulted if the substance in contact with the rabbit skin has caused destruction or irreversible alternation of the tissue. Tissue destruction is considered to have occurred if, at any of the readings, there is ulceration or necrosis. Tissue destruction does not include merely sloughing of the epidermis, or erythema, edema, or fissuring.

299. Part 174 is revised to read as follows:

PART 174—CARRIAGE BY RAIL

Subpart A—General Requirements

Sec.
174.1 Purpose and scope.
174.3 Unacceptable hazardous materials shipments.
174.5 Carrier's materials and supplies.
174.7 Responsibility for compliance.
174.8 Inspection.
174.9 Inspection of tank cars.
174.10 Inspection of cars at interchange.
174.11 Canadian shipments and packages.
174.12 Intermediate shippers and carriers.
174.14 Movements to be expedited.
174.16 Removal and disposition of hazardous materials at destination.
174.18 Astray shipments.
174.20 Local or carrier restrictions.

Subpart B—General Operating Requirements

174.24 Shipping papers.
174.25 Additional information on waybills, switching orders and other billings.
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AUTHORITY: 18 U.S.C. 834, 49 CFR 1.53(g).

Subpart A—General Requirements

§ 174.1 Purpose and scope.

This part prescribes requirements in addition to those contained in Parts 171, 172, 173, and 179 of this subchapter, to to be observed by carriers with respect to the transportation of hazardous materials in or on rail cars.

§ 174.3 Unacceptable hazardous materials shipments.

A shipment of a hazardous material that is not prepared for transportation in accordance with Parts 172 and 173 of this subchapter may not be accepted for transportation or transported by rail.

§ 174.5 Carrier's materials and supplies.

This subchapter applies to the transportation of a carrier's materials and supplies moving by rail, except that the shipper's certification is not required when these materials and supplies are being transported by the carrier who owns them.

§ 174.7 Responsibility for compliance.

Unless this subchapter specifically provides that another person is to perform a particular duty, each carrier, including a connecting carrier, shall perform the duties specified and comply with each applicable requirement of this part, and shall instruct his employees in relation thereto.

§ 174.8 Inspection.

(a) Methods of manufacture, packing, and storage of hazardous materials in-

sofar as they affect safety in transportation by rail, must be open to inspection by a duly authorized representative of the Department, an initial carrier, and the Bureau of Explosives.

(b) At any point where a train is required to be inspected, each placarded rail car and each rail car immediately adjacent thereto must be inspected. The cars may continue in transit only when the inspection indicates that the cars are in a safe condition for transportation. (See §§ 174.9 and 174.10.) The inspection of a rail car other than a tank car or a rail car containing Class A explosives must include a visual inspection for obvious defects of the running gear and any leakage of contents from the car and to determine whether all required placards are in place and conform to the information given on the train consist.

(c) For inspection requirements applicable to rail cars containing Class A explosives, see §§ 174.10 and 174.104.

§ 174.9 Inspection of tank cars.

(a) Each loaded placarded tank car must be inspected by the carrier before acceptance at the originating point and when received in interchange to see that they are not leaking and that the air and hand brakes, journal boxes, and trucks are in proper condition for service.

(b) An empty tank car which previously contained a hazardous material and which is tendered for movement or received in interchange must have all manhole covers, outlet valve reducers, outlet valve caps, outlet valve cap plugs, end plugs, and plugs or caps or other openings securely in their proper places, except that heater coil inlet and outlet pipes must be left open for drainage.

(c) The safety valves on a tank car may not be tested while the car is loaded. Whenever a test of the safety valves or tank becomes due while a loaded car is in transit, unless the car is leaking or in a manifestly insecure condition, it must be forwarded to its destination, carded on each side with a card exhibiting the following notice:

Safety valves overdue for test:
Tank overdue for test:
Moving under authority of 49 CFR 174.9 (c).

A prompt report of each such movement, showing the identifying initials and number of each car, must be made to the Bureau of Explosives by the carrier carding the cars.

§ 174.10 Inspection of cars at interchange.

(a) Each rail car containing explosives requiring EXPLOSIVES A placards (see § 174.104) which is offered by a connecting line must be visually inspected externally by the receiving line, including the roof. If practicable, the receiving carrier should also inspect the lading. The car may not be forwarded until all discovered violations have been corrected.

(b) If the car shows evidence of or if there is any reason to suspect that it has received rough treatment, the lading must be inspected and placed in proper condition before the car is permitted to proceed. When interchange occurs and the inspection is performed after daylight hours, electric flashlights should be used and naked lights may not be used.

(c) A shipment of hazardous materials offered by a connecting carrier must comply with this subchapter, and the revenue waybill, freight bill, manifest of lading, card waybill, switching order, transfer slip ticket, or other billing, must bear the placard endorsement prescribed by § 174.25 of this subpart in letters not less than three-eighths of an inch high near the car number. The billing must also bear a notation stating the name of the placard followed by the word "Placarded".

(d) A car containing packages of hazardous materials other than explosives may not be offered in interchange if the packages are in a leaking condition.

(e) In the case of a tank car which has developed small leaks in the course of its movement to an interchange point and which requires a short movement to effect delivery for unloading by the consignee, the movement may be made if it can be made safely adhering to the precautions prescribed by § 174.50.

§ 174.11 Canadian shipments and packages.

A Canadian shipment or package may be transported by rail car within the United States if it is in compliance with the requirements of this subchapter or the regulations of the Canadian Transport Commission as provided in § 173.8 of this subchapter.

§ 174.12 Intermediate shippers and carriers.

(a) Each intermediate carrier, including a freight forwarder, must have on file a copy of the shipper's certified shipping paper, as prescribed in Part 172 of this subchapter, for each shipment of hazardous materials it handles. An intermediate shipper or carrier may not forward or transport a shipment of hazardous materials if it does not meet the requirements of this subchapter.

(b) An intermediate carrier offering or delivering for transportation any loaded motor vehicle, trailer, semi-trailer, or container containing any hazardous material must show on the shipping paper the information required by § 172.201 of this subchapter and a description of the type vehicle or container.

§ 174.14 Movements to be expedited.

(a) A carrier must forward each shipment of hazardous materials promptly and within 48 hours (Saturdays, Sundays, and holidays excluded), after acceptance at the originating point or receipt at any yard, transfer station, or interchange point, except that where biweekly or weekly service only is performed, a shipment of hazardous materials must be forwarded on the first available train.

(b) A tank car loaded with any flammable liquid or gas, or a poison gas, may not be received and held at any point, subject to forwarding orders, so as to defeat the purpose of this section or of § 174.204 of this subchapter.

§ 174.16 Removal and disposition of hazardous materials at destination.

(a) *Delivery at non-agency stations.* A shipment of explosives may not be unloaded at non-agency stations unless the consignee is there to receive it or unless properly locked and secure storage facilities are provided at that point for its protection. If delivery cannot be so made, the shipment must be taken to next or nearest agency station for delivery.

(b) *Delivery at agency stations.* A carrier shall require the consignee of each shipment of hazardous materials to remove the shipment from carrier's property within 48 hours (exclusive of Saturdays, Sundays, and holidays) after notice of arrival has been sent or given. If not so removed, the carrier shall immediately dispose of the shipments as follows:

(1) *Class A explosives:* If safe storage is available, by storage at the owner's expense; if safe storage is not available, by return to the shipper, sale, or destruction under supervision of a competent person; or if safety requires, by destruction under supervision of a competent person.

(2) *Hazardous materials, except Class A explosives, in carload shipments:* By storage on the carrier's property; by storage on other than the carrier's property, if safe storage on the carrier's property is not available; or by sale at expiration of 15 calendar days after notice of arrival has been sent or given to the consignee, provided the consignor has been notified of the non-delivery at the expiration of a 48-hour period and orders for disposition have not been received.

(3) *Hazardous materials, except Class A explosives, in less-than-carload shipments:* By return to the shipper if notice of non-delivery was requested and given the consignor as prescribed by the carrier's tariff, and orders for return to shipper have been received; by storage on the carrier's property; by storage on other than the carrier's property, if safe storage on carrier's property is not available; or by sale at expiration of 15 calendar days after notice of arrival has been sent or given to the consignee, provided the consignor has been notified of non-delivery at expiration of a 48-hour period and orders for disposition have not been received.

§ 174.18 Astray shipments.

An astray package of hazardous materials other than explosives, of known destination and in proper condition for safe transportation, must be forwarded immediately on an "astray bill", showing the information required by Subpart C of Part 172 of this subchapter. When necessary to replace a label and doubt exists as to the kind, the FLAMMABLE LIQUID label must be applied. For astray shipments of explosives, see § 174.103.

§ 174.20 Local or carrier restrictions.

(a) When local conditions make the acceptance, transportation, or delivery of hazardous materials unusually hazardous, local restrictions may be imposed by the carrier.

(b) Each carrier must report to the Bureau of Explosives for publication the full information as to any restrictions which it imposes against the acceptance, delivery, or transportation of hazardous materials, over any portion of its lines under this section.

Subpart B—General Operating Requirements

§ 174.24 Shipping papers.

(a) Except as provided in paragraph (c) of this section, no person may accept for transportation by rail any hazardous material which is subject to this subchapter unless he has received a shipping paper prepared in the manner specified in Subpart C of Part 172 of this subchapter. In addition, the shipping paper must include a certificate, if required by § 172.204 of this subchapter. However, no member of the train crew of a train transporting the hazardous material is required to have a shipper's certificate on the shipping paper in his possession if the original shipping paper containing the certificate is in the originating carrier's possession.

(b) Except as provided in paragraph (c) of this section, a member of the train crew of a train transporting hazardous materials must have in his possession a copy of the shipping papers for shipment of hazardous materials being transported showing the information required by §§ 172.202 and 172.203 of this subchapter.

(c) Paragraphs (a) and (b) of this section do not apply to materials classed as ORM–A, B, C, or D.

§ 174.25 Additional information on waybills, switching orders and other billings.

(a) Each waybill, switching ticket, switching order or other billing used in place thereof, prepared from bills-of-lading, shipping orders or other shipping papers, and each shipping order used as a waybill for a rail car required to be placarded by Subpart F of Part 172 of this subchapter must, in addition to containing the information required by §§ 172.202 and 172.203 of this subchapter, be plainly market with—

(1) The placard notation specified in the following table immediately following the billing entry of each hazardous material or classification listed in the table;

(2) The placard endorsement specified in the following table for the hazardous material or classification concerned, in letters not less than three-eights of an inch high near the space on the face of the billing provided for the car number; and

(3) In the case of a flatcar carrying trailers or containers, an indication of which trailers or containers contain the hazardous materials.

Hazardous material or classification	Placard notation	Placard endorsement
Explosives, class A	EXPLOSIVES A	Explosives.
Explosive chemical ammunition containing class A poison.	EXPLOSIVES A and POISON GAS	Explosives and poison gas.
Explosives, class B	EXPLOSIVES B	Dangerous.
Explosives, class C	FLAMMABLE	Dangerous.
Flammable liquids	FLAMMABLE	Dangerous.
Flammable solids	FLAMMABLE SOLID	Dangerous.
Oxidizer	OXIDIZER	Dangerous.
Corrosive material	CORROSIVE	Dangerous.
Nonflammable gases	NON-FLAMMABLE GAS	Dangerous.
Flammable gases	FLAMMABLE GAS	Dangerous.
Poisonous gases or liquids, class A	POISON GAS	Poison gas.
Poison, class B	POISON	Dangerous.
Radioactive material (Yellow-III label only).	RADIOACTIVE	Radioactive material.
Organic peroxide	ORGANIC PEROXIDE	Dangerous.
Irritating material	DANGEROUS	Dangerous.
Combustible liquid	COMBUSTIBLE	None.
Chlorine	CHLORINE	Dangerous.
Fluorine	POISON	Dangerous.
Oxygen (liquefied)	OXYGEN	Dangerous.
Empty tank cars last containing a hazardous material.	See sec. 174.25(c)	Dangerous.

(b) When the initial movement of a rail car required to be placarded is a switching operation, the switching order, switching receipt, or switching ticket, and all copies thereof, prepared by the shipper, or by the carrier under the shipper's written authority, must contain the following:

(1) The commodity name specified in § 172.101 of this subchapter;

(2) The commodity classification specified in § 172.101 of this subchapter;

(3) The placard endorsement specified in § 174.25(a)(1);

(4) The placard notation specified in § 174.25(a)(2);

(5) The total quantity (by weight, volume, or as otherwise appropriate) of the hazardous material covered by the description; and

(6) The shipper's certification and signature specified in § 172.204 of this subchapter.

(c) Except as otherwise provided in this subchapter for empty tank cars last containing a hazardous material, the billing must show the word "EMPTY" followed by the name of last commodity loaded in car. Example: "EMPTY—Chlorine" or "EMPTY—Nitric acid".

(d) At each station, or other point, where any other shipment of material is loaded into a properly certified and placarded rail car containing a shipment of explosives, and when a shipment of explosives is transferred or reloaded, or a carload shipment of explosives is reconsigned, the carrier must make a record of the car, originating point, carrier's name and date of car certificate. In addition, the blocking and bracing must be inspected as required in § 174.104 and certified as being in compliance with the requirements of this part by the person making the inspection who shall sign the car certificates immediately below the signature which appears on Certificate Number 2 of the original car certificates attached to the car.

§ 174.26 Notice to train crews of placarded cars.

(a) At each terminal or other place where trains are made up or switched by crews other than train crews accompanying the outbound movement of cars, the carrier shall execute consecutively numbered notices showing the location in each train of each rail car placarded EXPLOSIVE A or POISON GAS. A copy of each notice must be delivered to the train and engine crew concerned, and a copy thereof showing delivery to the train and engine crew must be kept on file by the carrier at each point where the notice is given. At points where train or engine crews are changed, the notice must be transferred from crew to crew. See Part 172 of this subchapter for other placarded cars.

(b) The train crew must have a document indicating the position in the train of each loaded placarded car containing hazardous materials, except when the position is changed or the placarded car is placed in the train by a member of the train crew. A train consist on a separate document may be used to meet this requirement.

§ 174.33 Lost or destroyed labels and placards.

Each carrier shall maintain an adequate supply of the labels and placards specified in Subparts E and F of Part 172 of this subchapter on hand to replace those that become lost or destroyed. The carrier shall replace each lost or destroyed label or placard, as the case may be, based on the information on the shipping papers.

§ 174.45 Reporting hazardous materials incidents.

When an incident occurs during transportation in which hazardous materials are involved, Hazardous Materials Incident Reports may be required. See §§ 171.15 and 171.16 of this subchapter.

§ 174.47 Correction of violations.

(a) A shipment of explosives discovered to be in violation of any of the requirements of this subchapter may not be forwarded until all discovered violations have been corrected.

(b) Unless leaking, or in a manifestly insecure condition, each package of hazardous materials other than explosives in transit must be forwarded to its destination and a report made of any violation observed. A leaking package may not be forwarded until repaired or reconditioned. (See §§ 171.15 and 171.16

of this subchapter for reporting requirements.)

§ 174.49 Flammable vapors.

A placarded box car, trailer-on-flatcar container-on-flatcar or car known to contain flammable liquids, gases, or vapors may not be entered with a lighted open-flame lantern, torch, or other fire, until all car doors are opened and sufficient time has been allowed for ventilation and escape of any vapors.

§ 174.50 Leaking tank cars.

(a) A tank car discovered in a leaking condition in transit may not be unnecessarily moved until the unsafe condition has been corrected. In the case of a small leak, short movements may be made if a receptacle is attached under the leak to prevent the spread of the liquid over tracks.

(b) Each leaking tank car must be protected against ignition of the liquid or vapor by flame from sources such as lanterns, torches, flares, fusees, switch lights, switch-thawing flames, fires on sides of tracks, hot coals, lighted pipes, cigars, or cigarettes. All spectators should be kept at a safe distance.

(c) Highly volatile liquids can not be transferred by a vacuum pump unless the pump is placed so that the liquid flows to it from the tank by gravity.

(d) Whenever the leaking condition of a tank car requires the transfer of lading or makes the tank unfit for reloading, the car must be stenciled on both sides in letters three inches in size, adjacent to the car number, "LEAKY TANK. DO NOT LOAD UNTIL REPAIRED". The location of the leak must be indicated and marked with the symbol "X". The owner must be immediately notified by telegram and advised of the exact location of the leak. The stenciling may not be removed until the tank is repaired.

(e) Open-flame lights may not be brought near a placarded empty or partially loaded tank car.

(f) A leaking tank car containing any hazardous material may be switched to a location distant from habitation and highways if the move can be safely made.

Subpart C—General Handling and Loading Requirements

§ 174.55 General requirements.

(a) Except as otherwise specifically provided, each package of hazardous materials being transported by rail car must be loaded and blocked and braced as prescribed in this subchapter. For recommended methods of blocking and bracing in cars, truck bodies, or trailers, see Bureau of Explosives Pamphlet Nos. 6 and 6C. See loading and storage chart (§ 174.81) before loading labeled materials together.

(b) Packages of hazardous materials must be loaded and securely blocked and braced to prevent the packages from changing position, falling to the floor, or sliding into each other under shocks normally incident to transportation. This requirement does not preclude the use of loading methods that are designed to permit limited movement of the load and that are approved by the Department.

(c) Each package of hazardous materials bearing markings "THIS SIDE UP" or "THIS END UP" must be handled and loaded, blocked and braced, in the car to remain in the position indicated by the markings during transportation.

(d) A heavy package or container of hazardous materials may be trucked, rolled or moved by skid, fork truck, or other handling devices. It may not be dropped from any truck, platform, or rail car. Planks for rolling trucks from platforms to cars must have beveled edges.

(e) A carrier shall store hazardous materials in a secure location while they are being held for loading or delivery. The carrier shall insure that persons not having business with the carrier do not have access to these hazardous materials.

§ 174.56 Drums.

(a) Drums containing hazardous materials may be transported only in rail cars having level floors. Any car equipped with metal corrugated ends or having bowed ends must have end wall bulkheads constructed in accordance with the Bureau of Explosives standard for center gates. For recommended methods of blocking and bracing, see Bureau of Explosives Pamphlet No. 6.

(b) When hazardous materials are transported in drums with rolling hoops they must be loaded on their bottom with the filling holes up. They must be loaded in rows across the car with each alternate row being reduced by one drum. Each alternate row of drums must be placed on risers of sufficient height to prevent the rolling hoops contacting each other and placed tightly into the angle of space formed by the sidewalls of the drums in the preceding stack. Any space between the side of the car and the drums must be filled in with wooden boards or lumber, nailed to the car sides, sufficient in length and width to contact both hoops of the drums. Full car loads of heavily loaded drums must be separated into bays, with at least two in each end of the car and an intermediate gate between each bay. For recommended loading details, see Bureau of Explosives Pamphlet No. 6.

(c) When hazardous materials are transported in drums with filling holes in the sides, they must be loaded on their sides with the filling holes up. Drums must be loaded lengthwise of the car in rows and any space between sides of car and the nearest row of drums must be filled in with wooden boards or lumber nailed to car sides sufficient in length and width to contact both rolling hoops of the drums. For recommended methods of blocking and bracing, see Bureau of Explosives Pamphlet No. 6.

(d) When hazardous materials are transported in drums in a boxcar, they must be loaded from both ends of the car toward the space between the car doors, and there braced by center gates and struts. For recommended methods of blocking and bracing, see Bureau of Explosives Pamphlet No. 6.

§ 174.57 Cleaning cars.

All hazardous material which has leaked from a package in any rail car or on other railroad property must be carefully removed.

§ 174.59 Marking and placarding of rail cars.

No person may transport a rail car carrying hazardous materials unless it is marked and placarded as required by this subchapter. Placards and car certificates lost in transit must be replaced at the next inspection point, and those not required must be removed at the next terminal where the train is classified.

§ 174.61 Truck bodies, trailers or containers on flatcars.

(a) A truck body, trailer or container containing a hazardous material must be designed and loaded so that it will not rupture or become seriously damaged under conditions normally incident to transportation. Each unit must be secured on a flatcar so that it cannot permanently change position during transit. Packages of hazardous materials contained therein must be loaded and braced as provided by §§ 174.101, 174.112, 174.115 and 174.55. Placards must be applied when prescribed by Part 172 and Part 174.

(b) A truck body, trailer or container equipped with automatic heating or refrigerating equipment employing any fuel or article classed as a hazardous material may be loaded and transported on a flatcar if the equipment is of a type approved by the Bureau of Explosives. The truck body, trailer or container must be secured on the flatcar so that it cannot permanently change position during transit.

(c) A cargo tank or multi-unit tank car tank containing hazardous materials may not be transported in trailer-on-flatcar, or container-on-flatcar service except under conditions approved by the Federal Railroad Administrator.

§ 174.63 Portable containers and portable tanks.

(a) A portable container or portable tank containing a hazardous material must be designed and loaded so that it will not rupture, or become seriously damaged under conditions normally incident to transportation. Each unit must be secured in a closed or gondola car, on a flatcar, or in a truck body on a flatcar so that it cannot permanently change position during transit. The ends, sidewalls, or doors of a truck body or trailer may not be relied upon to prevent the shifting of a portable container or tank.

(b) A Specification 51, 52, 53, 56 or 57 portable tank may not be transported on flatcars or on flat trailers on flatcars, except under conditions approved by the Federal Railroad Administrator. For cargo tanks and multi-unit tank car tanks, see § 174.61(c).

(c) A Specification 51, 52, 53, 56 or 57 portable tank may be shipped only in a rail car that provides specific facilities for bracing and tie-down of these tanks. If TOFC or COFC service is utilized, the tank should be secured in its trailer body in compliance with Bureau of Explosives Pamphlet 6C.

§ 174.67 Tank car unloading.

(a) In unloading tank cars, the following conditions must be observed (see also § 174.200 for compressed gases):

(1) Unloading operations must be performed only by reliable persons properly instructed in unloading hazardous materials and made responsible for careful compliance with this part.

(2) Brakes must be set and wheels blocked on all cars being unloaded.

(3) Caution signs must be so placed on the track or cars to give necessary warning to persons approaching the cars from the open end of a siding and must be left up until after the cars are unloaded and disconnected from the discharge connection. The signs must be of metal or other comparable material, at least 12 inches high by 15 inches wide in size, and bear the words, "STOP—Tank Car Connected", or "STOP—Men at Work", the word "STOP" being in letters at least 4 inches high and the other words in letters at least 2 inches high. The letters must be white on a blue background.

(4) Before a manhole cover or outlet valve cap is removed from a tank car, the car must be relieved of all interior pressure by cooling the tank with water or by venting the tank by raising the safety valve or opening the dome vent at short intervals. However, if venting to relieve pressure will cause a dangerous amount of vapor to collect outside the car, venting and unloading must be deferred until the pressure is reduced by allowing the car to stand overnight or otherwise cooling the contents. These precautions are not necessary when the car is equipped with a manhole cover which hinges inward or with an inner manhole cover which does not have to be removed to unload the car, and when pressure is relieved by piping vapor into a condenser or storage tank.

(b) After the pressure is released, the seal must be broken and the manhole cover removed as follows: (1) *Screw type.* The cover must be loosened by placing a bar between the manhole cover lug and knob. After two complete turns, so that vent openings are exposed, the operation must be stopped, and if there is any sound of escaping vapor, the cover must be screwed down tightly and the interior pressure relieved as prescribed in paragraph (a)(4) of this section, before again attempting to remove the cover.

(2) *Hinged and bolted type.* All nuts must be unscrewed one complete turn, after which same precautions as prescribed for screw type cover must be observed.

(3) *Interior type.* All dirt and cinders must be carefully removed from around the cover before the yoke is unscrewed.

(c) When the car is unloaded through a bottom outlet valve, the manhole cover must be adjusted as follows: (1) *Screw type.* The cover must be put in place, but not entirely screwed down, so that air may enter the tank through the vent holes in threaded flange of the cover.

(2) *Hinged and bolted type. A nonmetallic block must be placed under one edge of the cover.*

(3) *Interior type.* The screw must be tightened up in the yoke so that the cover is brought up within one-half inch of the closed position.

(d) When unloading through the bottom outlet of a car equipped with an interior manhole type cover, and in each case where unloading is done through the manhole (unless a special cover with a safety vent opening and a tight connection for the discharge outlet is used), the manhole must be protected by asbestos or metal covers against the entrance of sparks or other sources of ignition of vapor, or by being covered and surrounded with wet burlap or similar cloth material. The burlap or other cloth must be kept damp by the replacement or the application of water as needed.

(e) Seals or other substances must not be thrown into the tank and the contents may not be spilled over the car or tank.

(f) The valve rod handle or control in the dome must be operated several times to see that outlet valve in bottom of tank is on its seat before valve cap is removed.

(g) The valve cap, or the reducer when a large outlet is to be used, must be removed with a suitable wrench after the set screws are loosened and a pail must be placed in position to catch any liquid that may be in the outlet chamber. If the valve cap or reducer does not unscrew easily, it may be tapped lightly with a mallet or wooden block in an upward direction. If leakage shows upon starting the removal, the cap or reducer may not be entirely unscrewed. Sufficient threads must be left engaged and sufficient time allowed to permit controlled escape of any accumulation of liquid in the outlet chamber. If the leakage stops or the rate of leakage diminishes materially, the cap or reducer may be entirely removed. If the initial rate of leakage continues, further efforts must be made to seat the outlet valve (see paragraph (f) of this section). If this fails, the cap or reducer must be screwed up tight and tne tank must be unloaded through the dome. If upon removal of the outlet cap the outlet chamber is found to be blocked with frozen liquid or any other matter, the cap must be replaced immediately and a careful examination must be made to determine whether the outlet casting has been cracked. If the obstruction is not frozen liquid, the car must be unloaded through the dome. If the obstruction is frozen liquid and no crack has been found in the outlet casting, the car may, if circumstances require it, be unloaded from the bottom by removing the cap and attaching unloading connections imediately. Before opening the valve inside the tank car, steam must be applied to the outside of the outlet casting or wrap casting with burlap or other rags and hot water must be applied to melt the frozen liquid.

(h) Unloading connections must be securely attached to unloading pipes on the dome or to the bottom discharge outlets before any discharge valves are opened.

(i) Tank cars may not be allowed to stand with unloading connections attached after unloading is completed. Throughout the entire period of unloading, and while car is connected to unloading device, the car must be attended by the unloader.

(j) If necessary to discontinue unloading a tank car for any reason, all unloading connections must be disconnected. All valves must first be tightly closed, and the closures of all other openings securely applied.

(k) As soon as a tank car is completely unloaded, all valves must be made tight, the unloading connections must be removed and all other closures made tight, except that heater coil inlet and outlet pipes must be left open for drainage. The manhole cover must be reapplied by the use of a bar or wrench, the outlet valve reducer and outlet valve cap replaced by the use of a wrench having a handle at least 36 inches long, and the outlet valve cap plug, end plug, and all other closures of openings and of their protective housings must be closed by the use of a suitable tool.

(l) Railroad defect cards may not be removed.

(m) If oil or gasoline has been spilled on the ground around connections, it must be covered with fresh, dry sand or dirt.

(n) All tools and implements used in connection with unloading must be kept free of oil, dirt, and grit.

§ 174.69 Removal of placards and car certificates after unloading.

When lading requiring placards or car certificates is removed from rail cars other than tank cars, placards and car certificates must be removed by the party unloading the car.

§ 174.81 Segregation and separation requirements for hazardous materials in rail cars.

(a) Hazardous materials may not be loaded, transported, or stored together except as provided in the following table:

The following table shows the hazardous materials which must not be loaded or stored together.

The X at an intersection of horizontal and vertical columns shows that these articles must not be loaded or stored together, for example: Detonating fuzes class A, with or without radioactive components g horizontal column must not be loaded or stored with high explosives or propellant explosives, class A b vertical column.

		a	b	c	d	e	f	g	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		Low explosives or black powder	High explosives or propellant explosives, class A	Initiating or priming explosives, wet: Diazodinitrophenol, fulminate of mercury, guanyl nitrosamino guanylidene hydrazine, lead azide, lead styphnate, nitro mannite, nitroseguanidine, pentaerythrite tetranitrate, tetrazene, lead mononitroresorcinate	Blasting caps, with or without safety fuse (including electric blasting caps), detonating primers	Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles or shell; ammunition for small arms with incendiary projectiles; rocket ammunition with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles; boosters (explosive); bursters (explosive); and supplementary charges (explosive) without detonators [c] [d]	Explosive projectiles; bombs; torpedoes; mines; rifle or hand grenades (explosive); jet thrust units (jato), class A; igniters, jet thrust, class A; rocket motors, class A; igniters, rocket motor, class A [e]	Detonating fuzes, class A, with or without radioactive components	Ammunition for cannon with empty, inert-loaded or solid projectiles, or without projectiles; rocket ammunition with empty, inert-loaded or solid projectiles	Propellant explosives, class B; jet thrust units (jato) class B; igniters, jet thrust, class B; rocket motors, class B; rocket engines (liquid), class B; igniters, rocket motor, class B; starter cartridges, jet engine, class B	Fireworks, special or railway torpedoes	Small arms ammunition, or cartridges, practice ammunition	Primers for cannon or small arms, empty cartridge bags—black powder igniters, empty cartridge cases, primed, empty grenades, primed, combination primers or percussion caps, toy caps, explosive cable cutters, explosive rivets	Percussion fuzes, tracer fuzes or tracers	Time, combination or detonating fuzes, class C	Cordeau detonant fuse, safety squibs, fuse lighters, fuse igniters, delay electric igniters, electric squibs, instantaneous fuse or igniter cord	Fireworks, common	Flammable liquids or flammable gases; Flammable liquid or flammable gas label	Flammable solids or oxidizing materials; Flammable solid, oxidizer, or organic peroxide label	Corrosive liquids; Corrosive label	Nonflammable gases; Nonflammable gas label	Poisonous gases or liquids, in cylinders, projectiles or bombs, poison gas label	Radioactive materials
CLASS A EXPLOSIVES																							
Low explosives or black powder	(a)			X							X						X	X	X	X	X	X	[f] X
High explosives or propellant explosives, class A	(b)			X	X			X			X						X	X	[g] X	X	X	X	[f] X
Imitiating or priming explosives, wet: Diazodinitrophenol, fulminate of mercury, guanyl nitrosamino guanylidene hydrazine, lead azide, lead styphnate, nitro mannite, nitroseguanidine pentaerythrite tetranitrate tetrazene, lead mononitroresorcinate	(c)	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	[f] X
Blasting caps, with or without safety fuse (including electric blasting caps), detonating primers	(d)		X	X		X	X				[h] X						[h] X	[h] X	[h] X	[h] X	[h] X	X	[f] X
Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles or shell, ammunition for small arms with explosive bullets, or ammunition for small arms with explosive projectiles, or rocket ammunition with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles; and boosters (explosive), bursters (explosive), or supplementary charges (explosive) without detonators [c] [d]	(e)			X	X			X			X						X	X	X	X	X	X	[f] X
Explosive projectiles, bombs, torpedoes, or mines, rifle or hand grenades (explosive), jet thrust units (jato), explosive, class A, or igniters, jet thrust (jato), explosive, class A [e]	(f)			X	X			X			X						X	X	X	X	X	X	[f] X
Detonating fuzes, class A, with or without radioactive components	(g)		X	X		X	X				X						X	X	X	X	X	X	[f] X
CLASS B EXPLOSIVES																							
Ammunition for cannon with empty, inert-loaded or solid projectiles, or without projectiles, or rocket ammunition with empty projectiles, inert-loaded or solid projectiles or without projectiles	1			X																[i] X		X	
Propellant explosives, class B, jet thrust units (jato) class B, igniters, jet thrust (jato), class B, or starter cartridges, jet engine, class B	2			X																[i] X		X	
Fireworks, special or railway torpedoes	3	X	X	X	[h] X	X	X	X														X	

The following table shows the hazardous materials which must not be loaded or stored together.

The X at an intersection of horizontal and vertical columns shows that these articles must not be loaded or stored together, for example: Detonating fuzes class A, with or without radioactive components g horizontal column must not be loaded or stored with high explosives or propellant explosives, class A b vertical column.

		a	b	c	d	e	f	g	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		Low explosives or black powder	High explosives or propellant explosives, class A	Initiating or priming explosives, wet: Diazodinitrophenol, fulminate of mercury, guanyl nitrosaminio guanylidene hydrazine, lead azide, lead styphnate, nitro mannite, nitrosoguanidine, pentaerythrite-tetranitrate, tetrazene, lead mononitroresorcinate	Blasting caps, with or without safety fuse (including electric blasting caps), detonating primers	Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles or shell; ammunition for small arms with incendiary projectiles; ammunition for small arms with explosive projectiles; rocket ammunition with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles; boosters (explosive); and supplementary charges (explosive) without detonators d	Explosive projectiles; bombs; torpedoes; mines; rifle or hand grenades (explosive); jet thrust units (jato), class A; igniters, motor, class A; rocket motors, class A; igniters, rocket	Detonating fuzes, class A, with or without radioactive components	Ammunition for cannon with empty, inert-loaded or solid projectiles, or without projectiles; rocket ammunition with empty, inert-loaded or solid projectiles	Propellant explosives, class B; jet thrust units (jato), class B; igniters, jet thrust, class B; rocket motors, class B; rocket engines (liquid), class B; igniters, rocket motor, class B; starter cartridges, jet engine, class B	Fireworks, special or railway torpedoes	Small arms ammunition, or cartridges, practice ammunition	Primers for cannon or small arms, empty cartridge bags—black powder igniters, empty cartridge cases, primed, empty grenades, primed, combination primers or percussion caps, toy caps, explosive cable cutters, explosive rivets	Percussion fuzes, tracer fuzes or tracers	Time, combination or detonating fuzes, class C	Cordeau detonant fuse, safety squibs, fuse lighters, fuse igniters, delay electric igniters, electric squibs, instantaneous fuse or igniter cord	Fireworks, common	Flammable liquids or flammable gases; Flammable liquid or flammable gas label	Flammable solids or oxidizing materials; Flammable solid, oxidizer, or organic peroxide label	Corrosive liquids; Corrosive label	Nonflammable gases; Nonflammable gas label	Poisonous gases or liquids, in cylinders, projectiles or bombs poison gas label	Radioactive materials
CLASS C EXPLOSIVES																							
Small arms ammunition, or cartridges, practice ammunition	4			×																			
Primers for cannon or small arms, empty cartridge bags—black powder igniters, empty cartridge cases, primed, empty grenades, primed, combination primers or percussion caps, toy caps, explosive cable cutters, explosive rivets	5			×																			
Percussion fuzes, tracer fuses or tracer	6			×																			
Time, combination or detonating fuses, class C	7			×																			
Cordeau detonant fuse, safety squibs, fuse lighters, fuse igniters, delay electric igniters, electric squibs, instantaneous fuse or igniter cord	8			×																			
Fireworks, common	9	×	×	×	[a]×	×	×	×														×	
OTHER DANGEROUS ARTICLES																							
Flammable liquids or flammable gases; Flammable liquid or flammable gas label	10	×	×	×	[a]×	×	×	×														×	
Flammable solids or oxidizing materials; Flammable solid, oxidizer, or organic peroxide label	11	×	[c]×	×	[c]×	×	×	×												[b]×		×	
Corrosive materials; Corrosive label	12	×	×	×	[c]×	×	×	×	[b]×	[b]×									[b]×			×	
Nonflammable gases; Nonflammable gas label	13	×	×	×	[c]×	×	×	×														×	
Poisonous gases or liquids, in cylinders, projectiles or bombs, poion gas label	14	×	×	×	×	×	×	×	×	×	×							×	×	×			
Radioactive materials; Radioactive materials; Radioactive label except 70	15	[f]×	[f]×	[f]×	[f]×	[f]×	[f]×	[f]×															

[a] Blasting caps or electric blasting caps in quantities not exceeding 1,000 caps may also be loaded and transported with articles named in vertical and horizontal columns 3, 9, 10, 11, 12, and 13. Loading and transportation of blasting caps or electric blasting caps in any quantity with articles named in vertical or horizontal columns b, c, e, or f is prohibited.

[b] Unless loaded in opposite ends of car, corrosive liquids must not be loaded with flammable solids, oxidizing materials, ammunition for cannon with or without projectiles, or propellant explosives, except that shippers loading carload shipments of corrosive liquids and flammable solids or oxidizing materials and who have obtained prior approval from the Department may load such materials together when it is known that the mixture of contents will not cause a dangerous evolution of heat or gas.

[c] Explosives, class A and explosives, class B must not be loaded or stored with chemical ammunition containing incendiary charges or white phosphorus either with or without bursting charges.

[d] Bursters (explosive), boosters (explosive), or supplementary charges (explosive) without detonators when shipped by, to or for the Departments of the Army, Navy, and Air Force of the United States Government may be loaded with any of the articles named except those in columns c, d, 3, 9, 10, 11, 12, 13, 14, and 15.

[e] Does not include nitrocarbonitrate or ammonium nitrate, fertilizer grade, which may be loaded, transported or stored with high explosives or with blasting caps or electric blasting caps, and detonating primers.

[f] Normal uranium, depleted uranium, and thorium metal in solid form may also be loaded and transported with articles named in vertical and horizontal columns a, b, c, d, e, f, and g.

NOTE 1: Charged electric storage batteries must not be loaded in the same car nor stored with any class A explosive.

NOTE 2: Cyanides or cyanide mixtures must not be loaded or stored with acids of corrosive liquids.

NOTE 3: Gas identification sets may be loaded and transported with all articles named except those in column c.

NOTE 4: Nitric acid, when loaded in the same car with other acids or other corrosive liquids in carboys, must be separated from the other carboys. A 2 by 6 inch plank, set on edge, should be nailed across the car floor at least 12 inches from the nitric acid carboys, and the space between the plank and the carboys of nitric acid should be filled with sand sifted ashes or other incombustible absorbent material.

NOTE 5: Smokeless powder for small arms in quantities not exceeding 100 pounds net weight in one car shall be classed as a flammable solid for purposes of transportation when approved for such classification by the Bureau of Explosives.

Subpart D—Handling of Placarded Cars

§ 174.83 Switching of cars containing hazardous materials.

(a) In switching operations where the use of hand brakes is necessary, a loaded placarded tank car, or a draft which includes a loaded placarded tank car, may not be cut off until the preceding car or cars clear the ladder track and the draft containing the loaded placarded tank car, or a loaded placarded tank car, shall in turn clear the ladder before another car is allowed to follow. In switching operations where hand brakes are used, it must be determined by trial whether a placarded car, or a car occupied by a rider in a draft containing a placarded car, has its hand brakes in proper working condition before it is cut off.

(b) A car placarded "EXPLOSIVES A" or "POISON GAS" may not be cut off while in motion or coupled into with more force than is necessary to complete the coupling. No car moving under its own momentum shall be allowed to strike any car placarded "EXPLOSIVES A" or "POISON GAS".

(c) When transporting a car placarded "EXPLOSIVES A" in a terminal, yard, or on a side track, or siding, it must be separated from the engine by at least one non-placarded car.

(d) The doors of each closed car placarded "EXPLOSIVES A" must be closed, securely fastened, and the lading securely braced before it is moved.

§ 174.84 Switching of flatcars carrying placarded trailers or containers.

(a) A placarded flatcar or a flatcar carrying a placarded trailer or container that bears any placard prescribed by Part 172 of this subchapter may not be cut off while in motion.

(b) No rail car moving under its own momentum may be permitted to strike any placarded flatcar or any flatcar carrying a placarded trailer or container.

(c) No placarded flatcar or any flatcar carrying a placarded trailer or container may be coupled into with more force than is necessary to complete the coupling.

§ 174.85 Placement of freight cars placarded "EXPLOSIVES A" in yards, on sidings, or side tracks.

A rail car placarded "EXPLOSIVES A" while in a yard or on a siding or side track must be placed so that it will be safe from all probable danger of fire. A car so placarded may not be placed under a bridge or overhead highway crossing, not in or alongside a passenger shed or station except for loading or unloading purposes.

§ 174.86 Position in train of cars placarded "EXPLOSIVES A" or "POISON GAS" when accompanied by cars carrying guards or technical escorts.

A rail car placarded "EXPLOSIVES A" or "POISON GAS" in a moving or standing train must be next to and ahead of any car occupied by the guards or technical escorts accompanying this car. However, if a car occupied by guards or technical escorts is equipped with a lighted heater or stove, it must be the fourth car behind any car requiring explosives placards.

§ 174.87 Placarded cars prohibited in passenger trains, limited in mixed trains.

(a) A placarded rail car may not be transported in a passenger train. However, it may be transported in a mixed train, but only at such times and between such points that freight train service is not in operation and subject to the following limitations:

(1) A placarded car (other than one placarded "COMBUSTIBLE") may not be transported next to an occupied caboose or a car carrying passengers in mixed trains, except as provided in § 174.86.

(2) When a car containing hazardous materials requiring labels is moved in a mixed train and it is not occupied by an employee of the carrier, placards must be applied to the car as required by Subpart F of Part 172 of this subchapter.

§ 174.88 Position in train of cars placarded "EXPLOSIVES A".

In a moving or standing train, a car placarded "EXPLOSIVES A" may not be placed nearer than the sixth car from the engine or caboose. However, when the length of the train will not permit this car to be so placed, it must be placed as near the middle of the train as possible, but not less than the second car from the engine or occupied caboose.

§ 174.89 Position in train of cars placarded "RADIOACTIVE MATERIALS".

In a moving or standing train, a car placarded "RADIOACTIVE MATERIALS" may not be placed next to any other placarded car (other than one placarded "COMBUSTIBLE"), an engine, occupied caboose, or carload of undeveloped film. Cars placarded "RADIOACTIVE MATERIALS" may be placed next to each other.

§ 174.90 Separating cars placarded "EXPLOSIVES A" or "POISON GAS" from other cars in trains.

(a) In a moving or standing train, a car placarded "EXPLOSIVES A" or "POISON GAS" may not be placed next to:

(1) A passenger car or combination car that may be occupied except as provided in § 174.86;

(2) Any loaded placarded car other than a car placarded (COMBUSTIBLE);

(3) An engine;

(4) A wooden underframe car (except on narrow gauge railroads);

(5) A loaded flatcar, except that loaded cars placarded "EXPLOSIVES A" may be placed next to each other. A flatcar equipped with permanently attached ends of rigid construction is considered to be an open-top car. (See subparagraph (6) of this paragraph.)

(6) An open-top car when any of the lading protrudes beyond the car ends or when any of the lading extending above the car ends is liable to shift so as to protrude beyond the car ends;

(7) A car with automatic refrigeration or heating apparatus in operation, or a car with open-flame apparatus in service, or with an internal combustion engine in operation;

(8) A car containing lighted heaters, stoves, or lanterns;

(9) A car occupied by any person, including any attendant for the cargo contained therein; or

(10) An occupied caboose, except as provided in § 174.86.

(b) In a moving or standing train, a car placarded "EXPLOSIVES A" may not be placed next to a car placarded "POISON GAS".

§ 174.91 Position in train of loaded placarded tank car other than car placarded "COMBUSTIBLE".

Except for a tank car placarded "COMBUSTIBLE", a loaded placarded tank car in a moving or standing train may not be nearer than the sixth car from the engine, occupied caboose, or passenger car. However, when the length of the train will not permit a loaded placarded tank car to be so placed, it must be placed as near the middle as possible and not nearer than the second car from the engine, occupied caboose, or passenger car.

§ 174.92 Separating loaded placarded tank cars other than cars placarded COMBUSTIBLE from other cars in trains.

In a moving or standing train a loaded placarded tank car, other than one placarded "COMBUSTIBLE", may not be placed next to:

(1) A passenger car or combination car, other than a car occupied by technical escorts and authorized personnel accompanying shipments;

(2) Any car placarded "EXPLOSIVES A", "RADIOACTIVE MATERIALS", or "POISON GAS";

(3) An engine or occupied caboose;

(4) A wooden underframe car (except on narrow gauge railroads);

(5) A loaded flatcar, other than a specially equipped car in trailer-on-flatcar or container-on-flatcar service or a flatcar loaded with vehicles secured by means of a device designed for that purpose and permanently installed on the flatcar, and of a type generally accepted for handling in interchange between railroads subject to the following:

(i) A flatcar equipped with permanently attached ends of rigid construction is considered to be an open-top car (see paragraph (a)(6) of this section); and

(ii) This exception for cars in trailer-on-flatcar service does not apply to loaded flatbed trucks, loaded flatbed trailers, loaded open-top trailers, or loaded trucks or trailers without securely closed doors;

(6) An open-top car when any of the lading protrudes beyond the car ends or when any of the lading extending above the car ends is liable to shift so as to protrude beyond the car ends;

(7) A car with automatic refrigeration or heating apparatus in operation or a car with open-flame apparatus in serv-

ice or with an internal combustion engine in operation;

(8) A car occupied by any person, including any attendant for the cargo contained therein.

§ 174.93 Position in train of empty placarded tank cars.

In a moving or standing train, empty placarded tank cars (other than a car subject to § 174.86 through § 174.90 and § 174.92) may not be placed nearer than the second car from the engine or caboose.

Subpart E—Detailed Requirements for Explosives

§ 174.100 Forbidden explosives.

(a) Explosives described in § 173.51 of this subchapter and initiating explosives, dry, may not be accepted for transportation by rail.

(b) Leaking or damaged packages of explosives may not be accepted for transportation by rail. Unless the carrier has knowledge or the shipper has substantiated to the carrier that a stain is due to contact with material other than a liquid explosive ingredient, the carrier shall refuse any package that shows excessive dampness, mold, or other outward sign of any oily stain, or other indication that absorption of the explosive is not perfect, or that the amount of the liquid part is greater than the absorbent can carry.

§ 174.101 Loading explosives.

(a) Boxes containing Class A explosives must be loaded so that the ends of wooden boxes will not bear against sides of any fiberboard boxes and so that the ends of any box will not cause a pressure point on a small area of another box.

(b) Explosive bombs, unfuzed projectiles, rocket ammunition and rocket motors, Class A or Class B explosives, which are not packed in wooden boxes, or large metal packages of incendiary bombs, each weighing 500 pounds or more, may be loaded in stock cars or in flat bottom gondola cars only if they are adequately braced. Boxed bombs, rocket ammunition and rocket motors, Class A or Class B explosives, which due to their size cannot be loaded in closed cars, may be loaded in open-top cars or on flatcars, provided they are protected from the weather and accidental ignition.

(c) Boxes of high explosives, low explosives or black powder packed in long cartridges, bags, or sift-proof liners, and containing no liquid explosive ingredient, may be loaded on their sides or ends.

(d) Class A explosives may not be loaded higher than any permanent car lining unless additional lining is provided as high as the lading.

(e) When the lading of a car includes any explosives, the weight of the lading must be distributed insofar as possible to equalize the weight on each side of the car and over the trucks.

(f) Except when boxed, metal kegs containing explosives must be loaded on their sides with their ends toward the ends of the car. Packages of explosives may not be placed in the space opposite the doors unless the doorways are boarded on the inside as high as the lading. This paragraph does not apply to palletized packages if they are braced so they cannot fall or slide into the doorways during transportation.

(g) Wooden kegs, fiber kegs, barrels, and drums must be loaded on their sides or ends, to best suit the conditions.

(h) At stations or other loading points, packages containing any explosives for which a certified and placarded car is prescribed (see § 174.104) or any blasting caps or electric blasting caps must be securely blocked and braced to prevent the packages from changing position, falling to the floor, or sliding into each other, under conditions normally incident to transportation. Explosives must be loaded so as to avoid transfer at station. For recommended methods of blocking and bracing, see Bureau of Explosives Pamphlets No. 6 and 6A. Heavy packages or containers must be trucked, rolled, or moved by skids, fork trucks, or other handling devices and may not be dropped from trucks, platforms, or cars. Planks for rolling trucks from platforms to cars must have beveled ends. Loading platforms and the shoes of each workman must be free from grit. All possible precautions must be taken against fire. Explosives must be kept in a safe place and inaccessible to unauthorized persons while being held by a carrier for loading or delivery.

(i) To prevent delays or local freight trains, when there are shipments of explosives for different destinations loaded in a "peddler car" or "way car" the shipment for each destination must be stayed separately.

(j) Forwarding and transfer stations for explosives must be provided with the necessary materials for staying.

(k) Shippers must furnish the material for staying packages of explosives loaded by them.

(l) Class A explosives may not be loaded, transported, or stored in a rail car equipped with any type of lighted heater or open-flame device, or electric devices having exposed heating coils, or in a rail car equipped with any apparatus or mechanism utilizing an internal combustion engine in its operation.

(m) Blasting caps or electric blasting caps in quantity not exceeding 1,000 caps may be loaded in any closed car which is in good condition, without car certificates or placards.

(n) A container car or portable container on a flatcar or a gondola car other than a drop-bottom car, when properly loaded, blocked, and braced to prevent change of position under conditions normally incident to transportation, may be used to transport any Class A explosive except black powder packed in metal containers. A portable container must be of a type approved by the Department and must be designed and maintained so as to be weathertight and so constructed that sparks cannot enter. A wooden container must be painted or treated with fire retardant material of a type approved by the Department. In addition:

(1) A portable container must be of such design and so braced as to show no evidence of failure of the container or the bracing when subjected to impact from each end of at least 8 miles per hour. Its efficiency shall be determined by actual test, using dummy loads equal in weight and general character to material to be shipped.

(2) A container car or car which is loaded with portable containers must be placarded with the explosives placards as required by Subpart F of Part 172 of this subchapter and with properly executed car certificates as required by § 174.104.

(3) Lading must be so loaded, blocked, and braced within the container that it will not change position under impact from each end of at least 8 miles per hour.

(o) Class A or Class B explosives may be loaded and transported in a tight closed truck body or trailer on a flatcar. Wooden boxed bombs, rocket ammunition, and rocket motors, Class A or Class B explosives, which due to their size cannot be loaded in tight, closed truck bodies or trailers, may be loaded in or on open-top truck bodies or trailers. However, they must be protected against accidental ignition, and the wooden containers must be painted or treated with fire retardant and waterproof material of a type approved by the Department. In addition:

(1) Each truck body or trailer must meet the requirements of Part 177 of this subchapter, applicable to shipments of explosives by motor vehicle.

(2) Each truck body or trailer must be so secured on the rail car so that it will not permanently change position or show evidence of failure or impending failure of the method of securing the truck body or trailer under impact from each end of at least 8 miles per hour. Its efficiency shall be determined by actual test, using dummy loads equal in weight and general character to the material to be shipped. For recommended methods of blocking and bracing, see Bureau of Explosives Pamphlet 6C.

(3) Lading must be so loaded, blocked, and braced within or on the truck body or trailer that it will not change position under impact from each end of at least 8 miles per hour. For recommended methods of blocking and bracing see Bureau of Explosives Pamphlet 6C.

(4) Each rail car containing explosives and each rail car loaded with truck bodies, trailers or containers containing explosives must be placarded with explosives placards as required by Subpart F of Part 172 of this subchapter and with properly executed car certificates as required by § 174.104.

(5) Each fuel tank of a heater or refrigerating machinery on the truck bodies or trailers must be drained and all automatic heating or refrigerating machinery must be made inoperative by disconnection of the automatic controls or the source of power for their operations.

§ 174.102 Forbidden mixed loading and storage.

(a) Class A explosives and initiating or priming explosives may not be transported together in the same rail car. Additionally, they may not be transported or loaded in the same rail car or stored on carrier property with charged electric storage batteries or with any hazardous material for which a NONFLAMMABLE GAS, FLAMMABLE GAS, FLAMMABLE LIQUID, FLAMMABLE SOLID, OXIDIZER, ORGANIC PEROXIDE, RADIOACTIVE or CORROSIVE label is required.

(b) Explosives may not be loaded together or with other hazardous materials, except as provided in § 174.81. See § 174.104 for loading shipments of explosives or any other material in a placarded and certified car containing a shipment of Class A explosives.

§ 174.103 Disposition of damaged or astray shipments.

(a) Packages of explosives found damaged or broken in transit may be repaired when practicable and not dangerous. A broken box of high explosives that cannot be repaired must be reinforced by stout wrapping paper and twine, placed in another strong box and surrounded by dry, fine sawdust or dry and clean cotton waste or elastic wads made from dry newspapers. A ruptured can or keg must be sealed and enclosed in a strong cloth bag of good quality and boxed. Damaged packages thus protected and properly marked may be forwarded. The box and waybill must be marked to indicate that it has been repacked.

(b) Care must be exercised in repacking damaged containers so that no spark is produced by contact of metal or other hard surfaces which could ignite loose particles of explosive compositions that may be strewn on car floors or freight. In addition, the car floors must be thoroughly swept, and washed with a plentiful supply of water. Iron-wheel trucks, metal hammers, or other metal tools that may produce sparks may not be used. Metal tools must be limited to those made of brass, bronze, or copper.

(c) Each package of explosives showing evidence of leakage of liquid ingredients must:

(1) Be refused if leakage is discovered before acceptance.

(2) Be disposed of to a person who is competent and willing to remove them from the carrier's property, if the leakage is discovered while the shipment is in transit; or

(3) Be removed immediately by consignee, if the leakage is discovered at the shipment's destination.

(d) When the disposition required by paragraph (c) of this section cannot be made, the leaking package must be packed in other boxes large enough to permit enclosure and the leaking boxes must be surrounded by at least 2 inches of dry, fine sawdust or dry and clean cotton waste, and be stored in a station magazine or other safe place until the arrival of an inspector of the Bureau of Explosives, or other authorized person, to superintend the destruction or disposition of the condemned material.

(e) If careful inspection shows that an astray shipment of explosives is in proper condition for safe transportation, it must be forwarded immediately to its destination if known, or returned to the shipper by the most practicable route.

(f) When a package in an astray shipment is not in proper condition for safe transportation (see paragraphs (a), (c), and (d) of this section), or when the name and address of the consignee and the shipper are unknown, disposition must be made as prescribed by paragraphs (c) and (d) of this section.

§ 174.104 Class A explosives; car selection, preparation, inspection, and certification.

(a) Except as provided in § 174.101 (b), (n), and (o), Class A explosives being transported by rail may only be transported in a certified and properly placarded closed car of not less than 80,000 pounds capacity, with steel underframes and friction draft gear, except that on a narrow-gage railroad they may be transported in a car of less capacity so long as the car of greatest capacity and strength available is used.

(b) Each rail car used for transporting class A explosives must meet the following requirements as applicable:

(1) The car must be equipped with air brakes and hand brakes which are in condition for service.

(2) The car may not have any holes or cracks in the roof, sides, ends, or doors through which sparks may enter, or unprotected decayed spots which may hold sparks and start a fire.

(3) The roof of the car must be carefully inspected from the outside for decayed spots, especially under or near the running board, and such spots must be covered or repaired to prevent their holding fire from sparks. A car with a roof generally decayed, even if tight, may not be used.

(4) The doors must close tightly so that sparks cannot get in at the joints, and, if necessary to achieve this degree of tightness, the doors must be stripped. The stripping should be placed on the inside and fastened to the door frames where it will form a shoulder against which the closed doors are pressed by means of wedges or cleats in door shoes or keepers. The openings under the doors should be similarly closed. The hasp fastenings must be examined with the doors closed and fastened, and the doors must be cleated when necessary to prevent them from shifting. When the car is opened for any reason, the wedges or cleats must be replaced before car containing explosives is permitted to proceed.

(5) The roller bearings or journal boxes, and the trucks must be carefully examined and put in such condition as to reduce to a minimum the danger of hotboxes or other failure necessitating the setting out of the car before reaching its destination. The lids or covers of journal boxes must be in place and the car must be equipped with roller bearings.

(6) The car must be carefully swept out before it is loaded. For less-than-carload shipments the space in which the packages are to be loaded must be carefully swept.

(7) Any holes in the floor or lining must be repaired and special care taken that there are no projecting nails or bolts or exposed pieces of metal which may work loose or produce holes in packages of explosives during transit. Protruding nails in the floor or lining which have worked loose must be drawn, and if necessary for the purpose of fastening the floor or lining, new nails must be driven through other parts thereof.

(8) Metal floor plates must be completely covered with wood, plywood, or fiber or composition sheets of adequate thickness and strength to prevent contact of the floor plates with the packages of explosives under conditions incident to transportation, except that the covering of metal floor plates is not necessary for carload shipments loaded by the Department of Defense provided the explosives are of such nature that they are not liable to leakage of dust, powder, or vapor which might become the cause of an explosion.

(9) If the car is equipped with automobile loading devices, it may not be used unless the loading device is securely attached to the roof of the car with fastenings supplementing those already provided and so fixed that it cannot fall.

(10) The car must be equipped with high-friction composition brake shoes only and brake rigging designed for this type of brake shoe. Each brake shoe on the car must be at least three-eighths inch thick, and in safe and suitable condition for service.

(11) The car must have either a metal subfloor with no combustible material exposed beneath the car, or metal spark shields extending from center sill to side sills and from end sills to at least 12 inches beyond the extreme treads of the inside wheels of each truck, which are tightly fitted against the subfloor so that there is no vacant space or combustible material exposed. The metal subfloor or spark shields may not have an accumulation of oil, grease, or other debris which could support combustion.

(c) Before Class A explosives may be loaded into a rail car, the car must have been inspected and certified to be in compliance with the requirements of paragraph (b) of this section by a qualified person designated under § 215.15 of this title. The certification shall be made in Car Certificate No. 1 on the form prescribed in paragraph (f) of this section.

(d) If the carrier furnishes the car to a shipper for loading Class A explosives, the shipper or his authorized employee shall, before commencing the loading of the car, inspect the interior thereof, and after loading certify to the proper condition of the car and the loading. This certification shall be made on the first signature line in Car Certificate No. 2 on the form prescribed in paragraph (f) of this section. In addition, the finished load must be inspected and certified to be in compliance with the requirements of this

part by a qualified person designated under § 215.15 of this title before the car goes forward. This certification shall be made on the second signature line in Car Certificate No. 2 on the form prescribed in paragraph (f) of this section. If the loading is performed by the carrier, Car Certificate No. 2 may only be signed by a qualified person designated under § 215.15 of this title.

(e) If a trailer or container containing Class A explosives is loaded on a flatcar, the loading and securing of the load on the car must be supervised by a representative of the shipper or carrier. The certification shall be made in Car Certificate No. 3 on the form prescribed in paragraph (f) of this section.

(f) Each car certificate for use in connection with the inspection of rail cars for the carriage of Class A explosives shall be printed on strong tag board measuring 7 x 7 inches, or 6 x 8 inches. It must be duly executed in triplicate by the carrier, and by the shipper if he loads the shipment. The original must be filed by the carrier at the forwarding station in a separate file and the other two must be attached to the car, one to each outer side on a fixed placard board or as otherwise provided.

---------- RAILROAD

CAR CERTIFICATE

No. 1 ---------- Station ---------- 19--.

I hereby certify that I have this day personally examined Car Number ---- and that the car is in condition for service and complies with the FRA Freight Car Safety Standards (49 CFR Part 125) and with the requirements for foreign cars used to transport explosives prescribed by the DOT Hazardous Materials Regulations (49 CFR Part 174).

Qualified Person Designated Under 49 CFR 215.15

No. 2 ---------- Station ---------- 19--.

I have this day personally examined the above car and hereby certify that the explosives in or on this car, or in or on vehicles or in containers have been loaded and braced; that placards have been applied, according to the regulations prescribed by the Department of Transportation; and that the doors of cars so equipped fit or have been stripped so that sparks cannot enter.

Shipper or his authorized agent

Qualified Person Designated Under 49 CFR 215.15

NOTE 1: A shipper must decline to use a car not in proper condition. No. 3 ---------- Station ---------- 19--.

I hereby certify that I have this day personally supervised the loading of the vehicles or containers on and their securement to the above car.

Shipper or railway employee inspecting loading and securement

NOTE 1: All certificates, where applicable, must be signed.

§ 174.105 Routing shipments, Class A explosives.

Before a shipment of Class A explosives destined to a point beyond the lines of the initial carrier is accepted from the shipper, the initial carrier shall ascertain that the shipment can go forward by the route designated. To avoid delays en route, the initial carrier must be in possession of full rate information before forwarding the shipment.

§ 174.106 "Order-Notify" or "C.O.D." shipments, Class A explosives.

(a) A carrier may not accept for transportation Class A explosives or blasting caps in any quantity when consigned to "order-notify" or "C.O.D.", except on a through bill of lading to a place outside the United States.

(b) A carrier may not accept for transportation Class A explosives or blasting caps which the shipper consigns to himself unless the shipper has a resident representative to receive them at the delivery point.

(c) A carrier may not accept Class A explosives for transportation subject to "stop-off privileges en route for partial loading or unloading.".

§ 174.107 Shipping days for Class A explosives.

(a) When practicable, each carrier should designate regular days for receiving from shippers less-than-carload lots of Class A explosives for each station where the carrier accepts such shipments.

(b) To enable the carrier to provide proper cars at stations where less-than-carload shipments of Class A explosives are accepted for loading by the carrier, the shipper shall give to the carrier not less than 24-hours' notice of his intention to offer such shipments, and state their destinations. When a regular day to receive all explosives shipments offered at such a station has been designated, this notice may be waived by the carrier, but the explosives shipments must be delivered on such days in time to permit proper inspection, billing, and loading on that day.

§ 174.109 Non-agency shipments.

If a shipment of explosives is accepted by a carrier at a non-agency station, the shipper shall make provision for proper certification and placarding of cars, examination of shipments, and the loading and staying of packages in cars. Waybills, switching orders, switching tickets, or other shipping papers must be prepared as prescribed in Part 172 of this subchapter.

§ 174.110 Car magazine.

When specially authorized by the carrier, Class A explosives in quantity not exceeding 150 pounds may be carried in construction or repair cars if the packages of explosives are placed in a "magazine" box made of sound lumber not less than 1 inch thick, covered on the exterior with metal, and provided with strong handles. The box must be plainly stenciled on the top, sides, and ends, in letters not less than 2 inches high, "EXPLOSIVES—DANGEROUS—HANDLE CAREFULLY". The box must be provided with strong hinges and with a lock for keeping it securely closed. Vacant space in the box must be filled with a cushioning material such as sawdust or excelsior, and the box must be properly stayed to prevent movement within the car. The car must be placarded with EXPLOSIVES A placards.

§ 174.112 Loading Class B explosives. (Also see § 174.101).

(a) Class B explosives may not be loaded, transported or stored in a rail car equipped with any type of lighted heater or open-flame device, or in a rail car equipped with any apparatus or mechanism utilizing an internal combustion engine in its operation.

(b) Except as provided in § 174.101 (b), Class B explosives must be transported in a closed car or container car which is in good condition, and into which sparks cannot enter. The car does not require the car certificates prescribed in § 174.104(c)–(f). If the doors are not tight, they must be stripped to prevent the entrance of sparks. Wood floored cars must be equipped with spark shields (see § 174.104). Packages of Class B explosives must be blocked and braced to prevent their movement and possible damage due to movement of other freight during transportation. For recommended methods of blocking and bracing see Bureau of Explosives Pamphlet No. 6.

(c) Class B explosives may not be transported in a truck body, trailer, or container on a flatcar unless—

(1) The truck body, trailer, or container is closed and tight;

(2) All automatic heating or refrigerating machinery with which the truck body, trailer, or container is equipped is inoperative; and

(3) Packages of Class B explosives are blocked and braced within the truck body, trailer, or container to prevent their movement and possible damage due to movement of other freight during transportation (ends, sidewalls, or doors of the truck body, trailer, or container may not be relied on to prevent the shifting of heavy loads). For recommended methods of blocking and bracing see Bureau of Explosives Pamphlet No. 6C. See § 174.101(o).

§ 174.114 Record to be made of change of seals on explosives laden cars.

(a) When a car seal is changed on a car requiring explosives placards while en route or before delivery to a consignee, a record of the change showing the following information must be made on or attached to the waybill or other form of memorandum which must accompany the car to its destination:

Railroad Place Date

Car Initials Car Number

Number or description of seal broken------

Number or description of seal used to reseal car ----------

Reasons for opening car----------

Condition of load----------

Name and occupation of person opening car

---

§ 174.115 Loading Class C explosives.

(a) Class C explosives may be loaded into any closed car in good condition. With the exception of blasting caps and electric blasting caps, Class C explosives may be loaded into any container car in good condition. The car does not require the car certificates prescribed in § 174.104 (c)–(f). Packages of Class C explosives must be blocked and braced to prevent their movement and possible damage due to movement of other freight during transportation. For methods of recommended blocking and bracing see Bureau of Explosives Pamphlet No. 6.

(b) Class C explosives may not be transported in a truck body, trailer, or container on a flatcar unless—

(1) The truck body, trailer, or container is closed and tight;

(2) All automatic heating or refrigerating machinery with which the truck body, trailer, or container is equipped is inoperative; and

(3) Packages of Class C explosives are blocked and braced within the truck body, trailer, or container to prevent their movement and possible damage due to movement of other freight during transportation. Ends, side walls, or doors of the truck body, trailer, or container may not be relied on to prevent shifting of heavy loads. For recommended methods of blocking and bracing see Bureau of Explosives Pamphlet No. 6C.

Subpart F—Detailed Requirements for Gases

§ 174.200 Special handling requirements.

(a) Flammable gases may not be loaded, transported, or stored in a rail car equipped with any type of lighted heater or open-flame device, or in a rail car equipped with any apparatus or mechanism utilizing an internal combustion engine in its operation.

(b) Flammable gases may not be loaded in a truck body or trailer equipped with any type of lighted heater or any automatic heating or refrigerating apparatus when such truck bodies or trailers are loaded on flatcars except as provided in paragraph (c) of this section.

(c) Heating or refrigeration apparatus may be operated on a motor vehicle loaded on a flatcar when the motor vehicle is loaded with flammable gases only if—

(1) The lading space is not equipped with any electrical apparatus that is not non-sparking or explosion-proof;

(2) There is no combustion apparatus in the lading space;

(3) There is no connection for the return of air from the lading space to any combustion apparatus; and

(4) The heating system conforms to § 393.77 of this title and does not heat any part of the lading over 130 degrees F.

§ 174.201 Compressed gas cylinders.

(a) Except as provided in paragraphs (b) and (c) of this section, cylinders containing compressed gases being transported in a rail car must be—

(1) Securely lashed in an upright position so as to prevent their overturning;

(2) Loaded into racks securely attached to the car;

(3) Packed in boxes or crates of such dimensions as to prevent their overturning; or

(4) Loaded in a horizontal position.

(b) Specification DOT–4L (§ 178.57) cylinders being transported in a rail car must be loaded in an upright position and be securely braced.

(c) Cylinders containing compressed gases may be transported in stock cars. However, they may not be transported in hopper bottom cars.

§ 174.204 Tank car delivery of gases.

(a) A tank car containing compressed gas may not be unloaded unless it is consigned for delivery and unloaded on a private track (see § 174.22(f)). However, if a private track is not available, it may be delivered and unloaded on carrier tracks subject to the following conditions:

(1) A tank car of DOT–106A or 110A type (§ 179.300 or 179.301 of this subchapter) may be delivered and the loaded unit tanks may be removed from the car frame on carrier tracks. However, a carrier may give permission for the unloading of these containers on carrier tracks only if a private siding is not available within a reasonable trucking distance of the final destination. In addition, before the car is accepted for transportation, the shipper must obtain from the delivering carrier and file with the originating carrier, written permission for the removal and the consignee must furnish an adequately strong mechanical hoist by which the tanks can be lifted from the car and deposited directly upon vehicles furnished by the consignee for immediate removal from carrier property.

(2) Except for DOT–106A or 110A type tank cars (§ 179.300 or § 179.301 of this subchapter), a tank car containing anhydrous ammonia, liquefied hydrocarbon or liquefied petroleum gas, and having interior pipes of liquid and gas discharge valves equipped with check valves, may not be delivered and unloaded on carrier tracks, unless the lading is piped directly from the car to permanent storage tanks of sufficient capacity to receive the entire contents of the car. Such cars may also be stored on a private track or on carrier tracks designated by the carrier for such storage.

§ 174.208 Rail cars, truck bodies, or trailers with fumigated or treated lading.

(a) A carrier may not accept or transport a rail car or a rail car loaded with a truck body or trailer, containing lading which has been fumigated or treated with a flammable liquid or gas within the preceding 48 hours, unless the truck body or trailer and the car, in the case of a closed car, has been ventilated to remove any danger of fire or explosion due to the presence of flammable vapor.

(b) A rail car or a rail car loaded with a truck body or trailer containing lading which has been fumigated or treated with a poisonous liquid, gas, or solid, must be placarded on each door (or as close as possible to the door if it is not possible to placard the door) with the placard described in § 173.426 of this subchapter.

§ 174.280 Poison gases with foodstuffs.

A carrier may not transport any package of gaseous material bearing a poison label in the same car with material which is marked as or known to be foodstuff, feed, or any other edible material intended for consumption by humans or animals.

§ 174.290 Poison A shipped by, for, or to the Department of Defense.

(a) Poison A shipped by, for, or to the Department of Defense may be transported by rail only if it is loaded and handled in accordance with the requirements of this section.

(b) Poison A may be transported in—

(1) DOT–5A or WD–5A [1] metal drums, by boxcar, gondola car (flat bottom), or stock car in carload lots. See § 174.55(a)(1) through (4) and § 174.600 for blocking, bracing, and stowage requirements;

(2) Tanks which are authorized under this section for Poison A, Specification DOT 106A (§§ 179.300 and 179.301 of this subchapter), mounted on or secured to a multi-unit car or gondola car (flat bottom) in carload lots only;

(3) Bombs, by boxcar, on gondola car (flat bottom) in carload lots only; or

(4) Projectiles or ammunition for cannon with gas filled projectiles, by boxcar in carload or less-than-carload lots.

(c) Each shipment of one or more carloads of Poison A, as described in paragraph (b) of this section, must be accompanied by a Department of Defense qualified escort supplied with equipment to handle leaks and other packaging failures which could result in escape of the gas. The escort shall remain with the shipment during the entire time that it is in the custody of the carrier and in the event of leakage or escape of gas, shall make repairs and perform decontamination as necessary.

(d) When Poison A is transported in a tank, the tank must be securely mounted on a rail car especially provided for it or on a gondola car prepared with substantial wooden frames and blocks.

(e) Bombs, projectiles, and cannon ammunition being transported by rail must be loaded, blocked and braced as shown in Bureau of Explosives Pamphlet No. 6A, or Department of Defense specifications. When a shipment is loaded in a gondola car it must be securely blocked and braced and not loaded higher than the sides of the car.

(f) When Poison A is transported in drums with filling holes in the heads, they must be loaded on their bottoms. They may be loaded in rows, lengthwise of the car and any space between the sides of the car and the nearest row of drums must be "filled in" with wooden boards or lumber nailed to sides of the car sufficient in length and width to contact both hoops of drums, or they may be loaded across the car in staggered stacks of which the number of drums in alternate stacks is reduced by one drum.

[1] War Department specification container.

All drums in stacks following the first stack loaded in the end of the car must be placed tightly into the angle of the space formed by the sidewalls of the drum in the preceding stack. Any space between the sides of the car and the drums in stacks having the greater number of drums must be filled in with wooden boards or lumber nailed to sides of the car sufficient in length and width to contact both hoops of the drums.

(g) When Poison A is transported in drums with filling holes in the sides, they must be loaded on their sides with the filling holes up. They must be loaded lengthwise of the car in rows and any space between the sides of the car and the nearest row of drums must be filled in with wooden boards or lumber nailed to sides of the car sufficient in length and width to contact both hoops of the drums.

(h) When Poison A is transported in drums in a boxcar, they must be loaded from ends of the car toward the space between the car doors, and there braced by center gates and wedges. See Sketch 1, Bureau of Explosives Pamphlet No. 6.

(i) The doorways of a boxcar in which Poison A is being transported must be protected by one of the methods prescribed in Sketch 1, Bureau of Explosives Pamphlet No. 6A.

Subpart G—Detailed Requirements for Flammable Liquids

§ 174.300 Special handling requirements.

(a) Flammable liquids may not be loaded, transported, or stored in a rail car equipped with any type of lighted heater or open-flame device, or in a rail car equipped with any apparatus or mechanism utilizing an internal combustion engine in its operation.

(b) A truck body or trailer which is loaded with a flammable liquid and equipped with a lighted heater or any automatic heating or refrigerating apparatus may not be loaded on a flatcar except as provided in paragraph (c) of this section.

(c) Heating or refrigeration apparatus on a motor vehicle loaded with flammable liquids may be operated while the motor vehicle is loaded on a flatcar only if—

(1) The lading space is not equipped with any electrical apparatus that is not non-sparking or explosion-proof;

(2) There is no combustion apparatus in the lading space;

(3) There is no connection for the return of air from the lading space to any combustion apparatus; and

(4) The heating system conforms to § 393.77 of this title and does not heat any part of the lading over 130 degrees F.

(d) Cylinders containing pyrophoric liquids, unless packed in strong wooden boxes and secured therein to protect valves, must be stowed with all valves and safety relief devices in the vapor space and must be secured so that no shifting will occur during transportation.

(e) Metal barrels or drums containing flammable liquids may be transported in a steel gondola or flatcar or in a stock car. However, they may not be transported in a hopper bottom car.

§ 174.304 Flammable liquids in tank cars.

A tank car containing a flammable liquid, other than liquid road asphalt or tar, may not be transported by rail unless it is originally consigned or subsequently reconsigned to a party having a private track on which it is to be delivered and unloaded (see § 171.8) or to a party using railroad siding facilities which are equipped for piping the liquid from the tank car to permanent storage tanks of sufficient capacity to receive the entire contents of the car.

§ 174.380 Poisonous flammable liquids with foodstuffs.

A carrier may not transport any package of flammable liquid bearing a poison label in the same car with material which is marked as or known to be foodstuffs, feed, or any other edible material intended for consumption by humans or animals.

Subpart H—Detailed Requirements for Flammable Solids

§ 174.410 Special handling requirements for matches.

(a) Each carload lot of strike-anywhere (friction) matches must be loaded as compactly as possible to avoid motion within the car, especially lengthwise of the car. Protruding nails, metal band anchors or other projections on sidewalls, ends, door posts, studding, or car floors likely to puncture packages must be removed or adequately covered to prevent damage to the containers of matches. Car doorways must be boarded on the inside to keep the packages from contacting the doors, and the inside lining of the car must be supplemented when necessary by strips nailed to the car and close enough together to keep the boxes from being jammed against the studding and broken by high pressures on small areas. The strongest dimension of the box must be loaded lengthwise of the car. Partial layers of boxes must be interlocked with the lower layers. The cars used must be made secure against the entrance of sparks or rain.

(b) Each carload lot of strike-anywhere matches handled subject to stop-off privileges must be loaded in accordance with paragraph (a) of this section and when necessary the load must be rearranged or blocked and braced by each consignee before forwarding.

(c) Each less-than-carload lot of strike-anywhere matches must be loaded so that it cannot fall and so that other packages of freight cannot fall on or injure it. Whenever practicable the packages of matches must be placed so as to facilitate ready removal in case of fire.

(d) A carload or less-than-carload lot of strike-anywhere matches which has been damaged by fire, or by water in extinguishing a fire, in transit or on a carrier's property must be reloaded in properly prepared cars, and braced or blocked before being forwarded to destination, to a freight claim department or claim adjuster, or to the original shipper or other party for salvage. Care must be taken to examine and repair damaged outside packages before reloading into car. All loose matches must first be destroyed. Individual interior boxes and paper-wrapped cartons or packages, must then be carefully placed in tight outside packages complying, as nearly as practical, with container specifications, but under no condition shall be outside package be of less strength than required by Specification 15A or 12C (§§ 178.168, 178.206 of this subchapter), nor of greater capacity than authorized. Charred cases may not be used. Boards used in repairing wooden cases must be so nailed that they will not allow any interior boxes, cartons, or packages to fall out. If the individual boxes or paper-wrapped packages do not fit snugly in the outside package, the vacant spaces must be filled tightly with dry and clean cotton waste, or elastic wads of dry newspapers or dry waste paper.

§ 174.450 Fires.

(a) *Cotton.* When fire occurs in a rail shipment of cotton in transit at a point where it cannot be reconditioned and where arrangements cannot be made with the originating carrier to sell it, all burnt cotton in the shipment must be stored under observation in as safe a place as practicable where it shall be held for not less than 10 days after all evidence of fire has been extinguished before forwarding. The billing must be changed to read "Burnt Cotton" and the cotton must be forwarded as a hazardous material. (See § 173.159 of this subchapter.)

(b) *Charcoal.* When fire occurs in a rail shipment of charcoal in transit, water should not be used if it is practicable to locate and remove the burning charcoal. Any charcoal which has become wet in extinguishing a fire must be removed from the car and not reshipped and the remainder of the charcoal must be held under observation in a dry place for at least five days before forwarding.

§ 174.480 Poisonous flammable solids with foodstuffs.

A carrier may not transport any package of flammable solids bearing a poison label in the same car with material which is marked as or known to be foodstuffs, feed, or any other edible material intended for consumption by humans or animals.

Subpart I—Detailed Requirements for Oxidizers

§ 174.510 Special handling requirements for nitrates.

A nitrate listed in § 173.182(b) of this subchapter being transported by rail may only be transported in a clean closed car, which is free of loose boards, cracks, holes, and exposed decayed spots. The interior of the car must be swept clean and be free of any projections capable of damaging bags when the nitrate is so packaged. The doors of the car must have tight closures. Ammonium nitrate (no organic coating), ammonium nitrate

fertilizer (materials tested in accordance with and meeting the definition in the Fertilizer Institute's publication "Definition and Test Procedures for Ammonium Nitrate Fertilizer", dated May 7, 1971), ammonium nitrate mixed fertilizer, or ammonium nitrate phosphate may be transported in bulk in a clean covered hopper car having journals and boxes in good condition.

§ 174.515 Cleaning cars; potassium permanganate.

After potassium permanganate is unloaded from a rail car, the car must be thoroughly cleaned unless the car is used exclusively in the carriage of potassium permanganate.

§ 174.580 Poisonous oxidizing materials with foodstuffs.

A carrier may not transport any package of oxidizing material bearing a poison label in the same car with material which is marked as or known to be foodstuff, feed, or any other edible material intended for consumption by humans or animals.

Subpart J—Detailed Requirements for Poisonous Materials

§ 174.600 Special handling requirements for Poison A materials.

A tank car containing Poison A may not be transported by rail unless it is originally consigned or subsequently reconsigned to a party having a private track on which it is to be delivered and unloaded (see § 171.8) or to a party using railroad siding facilities which are equipped for piping the liquid or gas from the tank car to permanent storage tanks or sufficient capacity to receive the entire contents of the car.

§ 174.615 Cleaning cars.

(a) A rail car which has contained arsenic, arsenate of lead, sodium arsenate, calcium arsenate, Paris green, calcium cyanide, potassium cyanide, sodium cyanide, or other poisonous materials which show any evidence of leakage from packages, must be thoroughly cleaned after unloading before the car is returned to service.

(b) After poisonous materials are unloaded from a rail car, that car must be thoroughly cleaned unless the car is used exclusively in the carriage of poisonous materials.

§ 174.680 Poisons with foodstuffs.

A carrier may not transport any package of toxic material bearing a poison label in the same car with material which is marked as or known to be foodstuffs, feed, or any other edible material intended for consumption by humans or animals.

Subpart K—Detailed Requirements for Radioactive Materials

§ 174.700 Special handling requirements for radioactive materials.

(a) Each rail shipment of low specific activity materials as defined in § 173.389 (c) of this subchapter must be loaded so as to avoid spillage and scattering of loose material. Loading restrictions are prescribed in § 173.392 of this subchapter.

(b) The number of packages of radioactive materials that may be transported in any rail car or stored at any single location is limited to that number which does not make a total transport index number (as defined in § 173.389(j) of this subchapter, and determined by adding together the transport index numbers on the labels of the individual packages) of more than 50. This provision does not apply to sole-use shipments as described in § 173.393 (j) or (k) or § 173.392 of this subchapter.

(c) Each package of radioactive material bearing RADIOACTIVE YELLOW-II or RADIOACTIVE YELLOW-III labels when being placed in a rail car, depot, or other place may not be placed closer than three feet to an area (or dividing partition between areas) which may be continuously occupied by any passenger, rail employee, or shipment of animals, nor closer than 15 feet to any package containing undeveloped film (if so marked). If more than one package of radioactive materials is present, the distance must be computed from the table below on the basis of the total transport index number (determined by adding together the transport index numbers on the labels of the individual packages) of packages in the car or storeroom:

Total transport index	Minimum separation distance [1]	Minimum distance [2]
None	0	0
0.1 to 10.0	15	3
10.1 to 20.0	[illegible]	4
20.1 to 30.0	29	5
30.1 to 40.0	33	6
40.1 to 50.0	[illegible]	7

[1] In feet to nearest undeveloped film.
[2] In feet to area of persons, or minimum distance in feet from dividing partition of a combination car.
NOTE.—The distance in the table must be measured from the nearest point on the packages of radioactive materials.

(d) Each fissile Class III radioactive material shipment (as defined in § 173.389(a) (3) of this subchapter) must be transported in accordance with one of the methods prescribed in § 173.396 (g) of this subchapter. The transport controls must be adequate to assure that no fissile Class III shipment is transported in the same rail car with any other fissile radioactive material shipment. In loading and storage areas each fissile Class III shipment must be segregated by a distance of at least 20 feet from other packages required to bear one of the "radioactive" labels described in Part 172 of this subchapter.

(e) Only a flatcar may be used to transport radioactive materials in a container weighing 15,000 pounds or more. A gondola car (other than a drop bottom car) may be used to transport any of the following.

(1) Radioactive material in a container weighing 5,000 pounds or more;

(2) Strong wooden boxes with inside containers of solid radioactive material, securely braced and cushioned; or

(3) Radioactive material in concrete-filled metal drums or in concrete vaults weighing 700 pounds or more.

(f) A person may not remain unnecessarily in a rail car containing radioactive materials.

§ 174.715 Cleanliness of cars after use.

(a) Each car used for transporting low specific activity radioactive materials in carload lots under the provisions of § 173.392(d) of this subchapter must be surveyed with appropriate radiation detection instruments after each use. A carrier may not return a car to service until the radiation dose rate at any accessible surface is not more than 0.5 millirem per hour, and there is no significant removable radioactive surface contamination (see § 173.397 of this subchapter).

(b) This section does not apply to any rail car used solely for transporting radioactive materials if a survey of the interior surface of the car shows that the radiation dose rate does not exceed 10 millirem per hour at the interior surface or 2 millirem per hour at 3 feet from any interior surface. The car must be stenciled with the words "FOR RADIOACTIVE MATERIALS USE ONLY" in lettering at least 3 inches high in a conspicuous place on both sides of the exterior of the car and it must be kept closed at all times other than during loading and unloading.

§ 174.750 Incidents involving leakage.

(a) In addition to the incident reporting requirements of §§ 171.15 and 171.16 of this subchapter, the carrier shall also notify the shipper at the earliest practicable moment following any incident in which there has been breakage, spillage, or suspected radioactive contamination involving radioactive materials shipments. Vehicles, buildings, areas, or equipment in which radioactive materials have been spilled may not be again placed in service or routinely occupied until the radiation dose rate at any accessible surface is less than 0.5 millirem per hour and there is no significant removable radioactive surface contamination (see § 173.397 of this subchapter).

(b) The package or materials should be segregated as far as practicable from personnel contact. If radiological advice or assistance is needed, the Energy Research and Development Administration (ERDA) should also be notified. In case of obvious leakage, or if it appears likely that the inside container may have been damaged, care should be taken to avoid inhalation, ingestion, or contact with the radioactive material. Any loose radioactive materials should be left in a segregated area and held pending disposal instructions, from qualified persons. Information involving the handling of radioactive materials in the event of a wreck may be found in Bureau of Explosives Pamphlet No. 1 and No. 2.

Subpart L—Detailed Requirements for Corrosive Materials

§ 174.800 Special handling requirements for corrosive materials.

(a) Carboys of corrosive liquids may not be transported by rail in a container car. Packages of corrosive liquids being transported in a rail car must be loaded, blocked, and braced so that they cannot change position during transportation due to shocks normally incident to transportation. Car doors may be cleated in an open position. Carboys of acid may be transported on a flat or stock car.

(b) When a less-than-carload shipment of corrosive liquids is loaded in a rail car with other freight, the carboys must be placed near the doorway of the car and must have wooden strips not less than 3 inches in height nailed to the car floor about 8 inches from the bracing. These strips must be arranged so that the liquid from a broken carboy will drain toward the doorway and outside the car. The space between the strips and the floor braces or blocking used for staying the carboy boxes must be covered with at least 1 inch thickness of clean and dry sand or earth, not sawdust or other combustible material.

(c) A carrier may not accept any carboy previously used for the shipment of corrosive liquids for transportation as an empty carboy unless it has been thoroughly and completely drained. The carrier must handle them with the necks up.

§ 174.810 Special handling requirements for wet electric storage batteries.

(a) Electric storage batteries (wet) for shipment by rail must be completely protected so that short circuits will be prevented and may not be loaded or stored with explosives.

(b) Wet electric storage batteries, and electrolyte must be packed as required by § 173.258 of this subchapter for transportation by rail and must be blocked and braced in the rail car so they cannot change position during transportation due to shocks normally incident to transportation. They must be loaded so that other freight cannot fall onto or slide against them. They may be transported on a gondola or in a flatcar. However, they may not be transported in a hopper bottom car.

§ 174.812 Special handling requirements for nitric acid.

(a) Carboys of nitric acid may not be transported in a boxcar or in a truck body or trailer on a flatcar more than two tiers high except that completely boxed carboys, DOT–1D, may be loaded three tiers high.

(b) Nitric acid, being transported by rail, with other corrosive liquids in carboys, must be separated from the other carboys. A 2 x 6 inch plank, set on edge, must be nailed across the car floor at least 12 inches from the nitric acid carboys and the space between the plank and the carboys of nitric acid must be filled with sand, sifted ashes, or other incombustible absorbent material.

300. Part 175 is revised to read as follows:

PART 175—CARRIAGE BY AIRCRAFT

Subpart A—General Information and Regulations

Sec.

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175.710 Special requirements for fissile Class III radioactive materials.

AUTHORITY: 49 U.S.C. 1472(h)(1), 49 CFR 1:53(h).

Subpart A—General Information and Regulations

§ 175.1 Purpose and scope.

This part prescribes requirements, in addition to those contained in Parts 171, 172 and 173 of this subchapter, to be observed by aircraft operators with respect to the transportation of hazardous materials aboard (including attached to or suspended from) civil aircraft.

§ 175.3 Unacceptable hazardous materials shipments.

A shipment of hazardous materials that is not prepared for shipment in accordance with Parts 172 and 173 of this subchapter may not be accepted for transportation or transported aboard an aircraft.

§ 175.5 Applicability.

This part contains regulations pertaining to the acceptance of hazardous materials for transportation, and the loading and transportation of hazardous materials, in any civil aircraft in the United States and in civil aircraft of United States registry anywhere in air commerce, except aircraft of United States registry under lease to and operated solely by foreign nationals outside the United States.

§ 175.10 Exceptions.

(a) This part does not apply to—

(1) Aviation fuel and oil in tanks that are in compliance with the installation provisions of 14 CFR, Chapter 1.

(2) Aircraft parts, equipment, and supplies other than fuel, if authorized or required to be carried aboard an aircraft for its operation including:

(i) Fire extinguishers;

(ii) Cylinders containing compressed gases;

(iii) Aerosol dispensers;

(iv) Distilled spirits;

(v) Hydraulic accumulators;

(vi) Batteries;

(vii) First-aid kits;

(viii) Signaling devices;

(ix) Tires; and

(x) Items of replacement therefor, except that batteries, aerosol dispensers, and signaling devices must be packed in strong outside containers, and tires must be deflated to a pressure not greater than 100 p.s.i.g.

(3) Hazardous materials loaded and carried in hoppers or tanks of aircraft certificated for use in aerial seeding, dusting, spraying, fertilizing, crop improvement, or pest control, to be dispensed during such an operation.

(4) Medicinal and toilet articles carried by a crewmember or passenger in his baggage (including carry-on baggage) when:

(i) The total capacity of all the containers used by a crewmember or passenger for the carriage of those articles does not exceed 75 ounces (net weight ounces and fluid ounces);

(ii) The capacity of each container other than an aerosol container does not exceed 16 fluid ounces or 1 pound of material.

(5) Small-arms ammunition for personal use carried by a crewmember or passenger in his baggage (excluding carry-on baggage) if securely packed in fiber, wood, or metal boxes.

(6) Prior to May 3, 1977, radioactive materials which meet those requirements in § 173.391 of this subchapter, in effect on May 3, 1975, that exempt them from the packaging, marking, and labeling requirements for shipment by rail express.

(7) Oxygen, or any hazardous material used for the generation of oxygen, carried for medical use by a passenger in accordance with 14 CFR § 121.574 or § 135.114.

(8) Human beings and animals with an implanted medical device, such as a heart pacemaker, that contains radioactive material or with radiopharmaceuticals that have been injected or ingested.

§ 175.20 Compliance.

Unless the regulations in this subchapter specifically provide that another person must perform a duty, each operator shall comply with all the regulations in Parts 102, 171, 172, and 175 of this subchapter and shall thoroughly instruct his employees in relation thereto. (See 14 CFR §§ 121.135, 121.401, 121.433a, 135.27 and 135.140.)

§ 175.30 Accepting shipments.

(a) No person may accept a hazardous material for transportation aboard an aircraft unless the hazardous material is—

(1) Authorized, and is within the quantity limitations specified for car-

riage aboard aircraft according to § 172.-101 of this subchapter;

(2) Described and certified on a shipping paper prepared in duplicate in accordance with Subpart C of Part 172 of this subchapter. The originating aircraft operator must retain one copy of each shipping paper;

(3) Labeled and marked, or placarded (when required), in accordance with Subparts D, E and F of Part 172 of this subchapter; and

(4) Labeled with a "CARGO AIRCRAFT ONLY" label (see § 172.448 of this subchapter) if the material as presented is not permitted aboard passenger-carrying aircraft.

(b) Except as provided in paragraph (c), no person may carry any hazardous material aboard an aircraft unless, prior to placing the material aboard the aircraft, the operator of the aircraft has inspected the outside container in which that material is packaged and has determined that—

(1) The container has no dents, holes, leakage or other indication that the integrity of the packaging has been compromised and, for radioactive materials, that package seal has not been broken;

(2) For radioactive materials to be carried aboard a passenger aircraft, there is accompanying the shipment a clear and visible statement, signed or stamped by the shipper or his agent as prescribed in Subpart C of Part 172 of this subchapter, that the shipment contains radioactive materials intended for use in, or incident to, research or medical diagnosis or treatment and meets the requirements of this subchapter for shipment in passenger-carrying aircraft.

(c) The requirements of paragraph (b) of this section do not apply to ORM-D materials packed in a freight container and offered for transportation by one consignor.

§ 175.33 Notification of pilot-in-command.

(a) When materials subject to the provisions of this subchapter are carried in an aircraft, the operator of the aircraft shall include in the cargo load manifest, and in a written notice given to the pilot-in-command before takeoff, the following information:

(1) The shipping name and the classification of each hazardous material as prescribed in § 172.101 of this subchapter;

(2) The quantity in terms of weight, volume, or as otherwise appropriate;

(3) The location of the hazardous materials in the aircraft; and

(4) The results of the inspections required by § 175.30(b) and § 175.700(d)(1).

§ 175.35 Shipping papers aboard aircraft.

(a) A copy of the shipping papers required by § 175.30(a)(2) must accompany the shipment it covers during transportation aboard an aircraft.

(b) The documents required by paragraph (a) of this section and § 175.33 may be combined into one document if it is given to the pilot-in-command before departure of the aircraft.

§ 175.40 Keeping and replacement of labels.

(a) Aircraft operators who engage in the transportation of hazardous materials must keep an adequate supply of the labels specified in Subpart E of Part 172 of this subchapter, on hand at each location where shipments are loaded aboard aircraft.

(b) Lost or detached labels for packages of hazardous materials must be replaced in accordance with the information provided on the shipping papers.

§ 175.45 Reporting hazardous materials incidents.

(a) Each operator that transports hazardous materials shall report to the nearest Air Carrier District Office (ACDO), Flight Standards District Office (FSDO), General Aviation District Office (GADO) or other FAA facility, except that in place of reporting to the nearest of those facilities a certificate holder under 14 CFR Part 121, 127, or 135 may report to the FAA District Office holding the carrier's operating certificate and charged with overall inspection of its operations, by telephone at the earliest practicable moment after each incident that occurs during the course of transportation (including loading, unloading or temporary storage) in which as a direct result of any hazardous material—

(1) A person is killed;

(2) A person receives injuries requiring his or her hospitalization;

(3) Estimated carrier or other property damage, or both, exceeds $50,000;

(4) Fire, breakage, or spillage or suspected radioactive contamination occurs involving shipment of radioactive materials (see § 175.700(b));

(5) Fire, breakage, spillage, or suspected contamination occurs involving shipment of etiologic agents. In addition to the report required by paragraph (a) of this section, a report on an incident involving etiologic agents should be telephoned directly to the Director, Center for Disease Control, U.S. Public Health, Atlanta, Georgia, area code 404–633–5313; or

(6) A situation exists of such a nature that, in the judgment of the carrier, it should be reported to the Department even though it does not meet the criteria of subparagraphs (1), (2), or (3) of this paragraph, e.g., a continuing danger to life exists at the scene of the incident.

(7) If the operator conforms to the provisions of this section, the carrier requirements of § 171.15 of this subchapter shall be deemed to have been satisfied.

(b) The following information shall be furnished in each report:

(1) Name of reporting person;

(2) Name and address of carrier represented by reporter;

(3) Phone number where reporter can be contacted;

(4) Date, time, and location of incident;

(5) The extent of the injuries, if any; and

(6) Classification, name and quantity of hazardous material involvement and whether a continuing danger to life exists at the scene.

(c) Each operator who transports hazardous materials shall report in writing, in duplicate, on DOT Form F 5800.1 within 15 days of the date of discovery, each incident that occurs during the course of transportation (including loading, unloading, or temporary storage) in which, as a direct result to hazardous materials, any of the circumstances set forth in paragraph (a) of this section occurs or their has been an unintentional release of hazardous materials from a package. Each operator making a report under this section shall send that report to the Materials Transportation Bureau, Office of Hazardous Materials Operations, Department of Transportation, Washington, D.C. 20590, with a separate copy to the FAA facility indicated in paragraph (a) of this section.

Subpart B—Loading, Unloading and Handling

§ 175.75 Quantity limitations aboard aircraft.

(a) Except as provided in § 175.85(b) in the case of a small, single pilot, cargo-only aircraft being used where other means of transportation are impracticable or not available, no person may carry on an aircraft—

(1) A hazardous material except as permitted in Part 172 of this subchapter;

(2) More than 50 pounds net weight of hazardous material in any inaccessible cargo pit, bin, or reusable freight container unless a larger quantity is permitted by this section.

(3) More than 150 pounds net weight of nonflammable, compressed gas in any inaccessible cargo pit, bin, or reusable freight container;

(4) Packages containing radioactive materials when their combined transport indexes exceed 50.

(b) No limitation applies to the number of packages of ORM material aboard an aircraft.

§ 175.78 Stowage compatibility of cargo.

No person may stow a package of a corrosive material on an aircraft next to or in a position that will allow contact with a package of flammable solids, oxidizing materials, or organic peroxides.

§ 175.79 Orientation of cargo.

(a) A package containing hazardous materials marked "THIS SIDE UP", "THIS END UP", or with arrows to indicate the proper orientation of the package, must be stored, loaded abroad an aircraft in accordance with such markings, and secured in a manner that will prevent any movement which would change the orientation of the package.

(b) A package containing liquid hazardous materials not marked as indicated in paragraph (a) of this section must be stored and loaded with closures up.

§ 175.85 Cargo location.

(a) No person may carry a hazardous material subject to the requirements of this subchapter in the cabin of a passenger-carrying aircraft.

(b) Except in the case of a small, single pilot aircraft being used where other means of transportation are impracticable or not available, each person carrying materials acceptable only for cargo aircraft shall carry those articles in a location accessible to a crewmember in flight. When materials acceptable for cargo-only aircraft are carried on a small, single pilot, cargo-only aircraft being used where other means of transportation are impracticable or not available, they may be carried in a location that is not accessible to the pilot, subject to the following conditions:

(1) No person other than the pilot, an FAA inspector, the shipper or consignee of the material or a representative of the shipper or consignee so designated in writing, or a person necessary for handling the material may be carried on the aircraft.

(2) The pilot must be provided with written instructions on characteristics and proper handling of the material.

(3) Whenever a change of pilots occurs while the material in on board, the new pilot must be briefed under a hand-to-hand signature service provided by the operator of the aircraft.

(c) No person may load magnetized material (which might cause an erroneous magnetic compass reading) on an aircraft, in the vicinity of a magnetic compass, or compass master unit, that is a part of the instrument equipment of the aircraft, in a manner that affects its operation. If this requirement cannot be met, a special aircraft swing and compass calibration may be made. No person loading magnetized materials may obscure the warning labels.

(d) No person may carry materials subject to the requirements of this subchapter in an aircraft unless they are suitably safeguarded to prevent their becoming a hazard by shifting. For packages bearing "RADIOACTIVE YELLOW-II" or "RADIOACTIVE YELLOW-III" labels, such safeguarding must prevent movement that would permit the package to be closer to a space that is occupied by a person or an animal than is permitted by § 175.700.

(e) No person may carry a material subject to the requirements of this subchapter that is acceptable for carriage in a passenger-carrying aircraft (other than magnetized materials) unless it is located in the aircraft in a place that is inaccessible to persons other than crewmembers.

§ 175.90 Damaged shipments.

Except as provided for in § 175.700, the operator of an aircraft shall remove from the aircraft any package subject to this subchapter that appears to be damaged or leaking. A package that appears to be damaged or leaking may not be transported on an aircraft subject to this part.

Subpart C—Specific Regulations Applicable According to Classification of Material

§ 175.305 Self-propelled vehicles.

(a) Self-propelled vehicles are exempt from the drainage requirements of § 173.120 of this subchapter when carried in aircraft designed or modified for vehicle ferry operations and when all of the following conditions are met:

(1) Authorization for this type operation has been given by the appropriate authority in the government of the country in which the aircraft is registered;

(2) Each vehicle is secured in an upright position;

(3) Each fuel tank is filled in a manner and only to a degree that will preclude spillage of fuel during loading, unloading, and transportation; and

(4) Ventilation rates to be maintained in the vehicle storage compartment have been approved by the appropriate authority in the government of the country in which the aircraft is registered.

§ 175.310 Transportation of flammable liquid fuel in small, passenger-carrying aircraft.

A small aircraft or helicopter operated entirely within the State of Alaska or into a remote area elsewhere in the United States may carry, in other than scheduled passenger operations, not more than 20 gallons of flammable liquid fuel, if—

(a) Transportation by air is the only practical means of providing suitable fuel;

(b) The flight is necessary to meet the needs of a passenger;

(c) The fuel is carried in metal containers that are either—

(1) DOT Specification 2A containers of not more than 5 gallons capacity, each packed inside a DOT Specification 12B fiberboard box or each packed inside a DOT Specification 15A, 15B, 15C, 16A, 19A or 19B wooden box, or in the case of a small aircraft in Alaska, each packed inside a wooden box of at least one-half inch thickness;

(2) Airtight, leakproof, inside containers of not more than 10 gallons capacity and of at least 28-gauge metal, each packed inside a DOT Specification 15A, 15B, 15C, 16A, 19A, or 19B wooden box or, in the case of a small aircraft in Alaska, each packed inside a wooden box of at least one-half inch thickness; or

(3) DOT Specification 17E containers of not more than 5 gallons capacity.

(d) In the case of a helicopter, the fuel is carried on external cargo racks;

(e) The area or compartment in which the fuel is loaded is ventilated so as to prevent the accumulation of fumes;

(f) Before each flight, the pilot-in-command—

(1) Informs each passenger of the location of the fuel and the hazards involved; and

(2) Prohibits smoking, lighting matches, the carrying of any lighted cigar, pipe, cigarette or flame, and the use of anything that might cause an open flame or spark, while loading or unloading or in flight; and

(g) Fuel is transferred to the fuel tanks only while the aircraft is on the surface.

§ 175.320 Cargo-only aircraft; only means of transportation.

(a) Notwithstanding § 172.101, when means of transportation other than air are impracticable or not available, hazardous materials listed in the following table may be carried on a cargo-only aircraft subject to the conditions stated in the table and in paragraph (b) and, when appropriate, paragraph (c) of this section:

Material description	Class	Conditions
Electric blasting caps (more than 1,000).	Class A explosives	Permitted only when no other cargo is aboard the aircraft. However, if the electric blasting caps are packed in an IME 22 container (see 49 CFR 171.7(d)(9)), they may be transported in the same aircraft with materials that are not classed as hazardous materials.
Electric blasting caps (1,000 or less).	Class C explosives	Permitted only when no other cargo is aboard the aircraft. However, if the electric blasting caps are packed in a DOT MC 201 container (49 CFR 178.318) or an IME 22 container (see 49 CFR 171.7(d)(9)), they may be transported in the same aircraft with materials other than class A or class B explosives.
Gasoline	Flammable liquid	Permitted in metal drums having rated capacities of 55 gal or less. May not be transported in the same aircraft with materials classed as class A, B, or C explosives, corrosive materials, or oxidizing materials. Permitted in installed metal tanks each having a capacity of more than 110 gal subject to the conditions specified in para. (c) of this section.
High explosives	Class A explosives	Limited to explosives to be used for blasting. Permitted only when no other cargo is aboard the aircraft or when being transported in the same aircraft with an authorized shipment of any 1 or more of the following materials to be used for blasting: Nitrocarbonitrate. Cordeau detonant fuse. Propellant explosive (solid) class B (water gels only). Propellant explosive (liquid) class B (water gels only).
Oil, n.o.s.; petroleum oil; or petroleum oil, n.o.s.	Flammable liquid	Permitted in metal drums having rated capacities of 55 gal or less. May not be transported in the same aircraft with materials classed as class A, B, or C explosives, corrosive materials, or oxidizing materials. Permitted in installed metal tanks each having a capacity of more than 110 gal subject to the conditions specified in para. (c) of this section.
Combustible liquid, n.o.s.	Combustible liquid	Permitted in installed metal tanks each having a capacity of more than 110 gal subject to the conditions specified in par. (c) of this section.

(b) The following conditions apply to the carriage of hazardous materials performed under the authority of this section:

(1) No person other than a required flight crewmember, an FAA inspector, the shipper or consignee of the material or a representative of the shipper or

consignee so designated in writing, or a person necessary for handling the material may be carried on the aircraft.

(2) The operator of the aircraft must have advance permission from the owner or operator of each manned airport where the material is to be loaded or unloaded or where the aircraft is to land while the material is on board. When the destination is changed after departure because of weather or other unforeseen circumstances, permission from the owner or operator of the alternate airport should be obtained as soon as practicable before landing.

(3) At any airport where the airport owner or operator or authorized representative thereof has designated a location for loading or unloading the material concerned, the material may not be loaded or unloaded at any other location.

(4) If the material concerned can create destructive forces or have lethal or injurious effects over an appreciable area as a result of an accident involving the aircraft or the material, the loading and unloading of the aircraft and its operation in takeoff, en route, and in landing must be conducted at a safe distance from heavily populated areas and from any place of human abode or assembly.

(5) If the aircraft is being operated by a holder of a certificate issued under 14 CFR Part 121, Part 127, or Part 135, operations must be conducted in accordance with conditions and limitations specified in the certificate holder's operations specifications or operations manual accepted by the FAA. If the aircraft is being operated under 14 CFR Part 91, operations must be conducted in accordance with an operations plan accepted and acknowledged in writing by the operator's FAA District Office.

(6) Each pilot of the aircraft must be provided written instructions stating the conditions and limitations of the operation being conducted and the name of the airport official[s] granting the advance permission required by the first sentence of subparagraph (2) of this paragraph.

(7) The aircraft and the loading arrangement to be used must be approved for safe carriage of the particular materials concerned by the FAA District Office holding the operator's certificate and charged with overall inspection of its operations, or the appropriate FAA District Office serving the place where the material is to be loaded.

(8) When Class A explosives are carried under the authority of this section, the operator of the aircraft shall obtain route approval from the FAA inspector in the operator's FAA District Office.

(9) During loading and unloading, no person may smoke, carry a lighted cigarette, cigar, or pipe, or operate any device capable of causing an open flame or spark within 50 feet of the aircraft.

(c) The following additional conditions apply to the carriage of flammable liquids and combustible liquids in metal tanks each having a capacity of more than 110 gallons under the authority of this section:

(1) The tanks and their associated piping and equipment and the installations thereof must have been approved under a supplemental type certificate.

(2) In the case of an aircraft being operated by a certificate holder, the operator shall list the aircraft and the supplemental type certificate approval information in its operating specifications. If the aircraft is being operated by other than a certificate holder, a copy of the supplemental type certificate must be carried on board the aircraft.

(3) The crew of the aircraft must be thoroughly briefed on the operation of the particular bulk tank system being used.

(4) During loading and unloading and thereafter until any remaining fumes within the aircraft are dissipated:

(i) Only those electrically operated bulk tank shutoff valves that have been approved under a supplemental type certificate may be electrically operated.

(ii) No engine or electrical equipment, avionic equipment, or auxiliary power units may be operated, except position lights in the steady position and equipment required by approved loading or unloading procedures, as set forth in the operator's operations manual, or for operators that are not certificate holders, as set forth in a written statement.

(iii) No person may fill a container, other than an approved bulk tank, with a flammable or combustible liquid or discharge a flammable or combustible liquid from a container, other than an approved bulk tank, while that container is inside or within 50 feet of the aircraft.

(iv) When filling an approved bulk tank by hose from inside the aircraft, the doors and hatches must be fully open to insure proper ventilation.

(v) Static ground wires must be connected between the storage tank or fueler and the aircraft, and between the aircraft and a positive ground device.

§ 175.630 Special requirements for poisons.

(a) No person may transport a package bearing a POISON label aboard an aircraft in the same cargo compartment with material which is marked as or known to be foodstuff, feed, or any other edible material intended for consumption by humans or animals.

(b) No person may operate an aircraft that has been used to transport any package bearing a POISON label unless, upon removal of such package, the area in the aircraft in which it was carried is visually inspected for evidence of leakage, spillage, or other contamination. All contamination discovered must be either isolated or removed from the aircraft. The operation of an aircraft contaminated with such poisons is considered to be the carriage of poisonous materials under paragraph (a) of this section.

§ 175.700 Special requirements for radioactive materials.

(a) No person may place any package of radioactive materials bearing "RADIOACTIVE YELLOW-II" or "RADIOACTIVE YELLOW-III" labels in an aircraft closer than the distances shown in the following table to a space (or dividing partition between spaces) which may be continuously occupied by people, or shipments of animals, or closer than the distances shown in the following table to any package containing undeveloped film (if so marked). If more than one of these packages is present, the distance shall be computed from the following table on the basis of the total transport index numbers shown on labels of the individual packages in the aircraft:

Total transport index	Minimum separation distances in feet to nearest undeveloped film for various times of transit					Minimum distance in feet to area of persons, or minimum distance in feet from dividing partition of cargo compartment
	Up to 2 hr	2-4 hr	4-8 hr	8-12 hr	Over 12 hr	
None	[illegible]	[illegible]	[illegible]	0	[illegible]	0
0.1 to 1.0	[illegible]	2	[illegible]	[illegible]	5	1
1.1 to 5.0	[illegible]	4	6	8	11	2
5.1 to 10.0	4	[illegible]	9	11	15	[illegible]
10.1 to 20.0	5	8	12	16	[illegible]	[illegible]
20.1 to 30.0	7	10	15	20	29	5
30.1 to 40.0	[illegible]	11	17	22	[illegible]	[illegible]
40.1 to 50.0	9	12	19	24	[illegible]	7

(b) In addition to the reporting requirements of § 175.45, the carrier must also notify the shipper at the earliest practicable moment following any incident in which there has been breakage, spillage, or suspected radioactive contamination involving radioactive materials shipments. Aircraft in which radioactive materials have been spilled may not be again placed in service or routinely occupied until the radiation dose rate at any accessible surface is less than 0.5 millirem per hour and there is no significant removable radioactive surface contamination (see § 173.397 of this subchapter). In these instances, the package or materials should be segregated as far as practicable from personnel contact. If radiological advice or assistance is needed, the U.S. Energy Research and Development Administration should also be notified. In case of obvious leakage, or if it appears likely that the inside container may have been damaged, care should be taken to avoid inhalation, ingestion, or contact with the radioactive materials. Any loose radioactive materials should be left in a segregated area pending disposal instructions from qualified persons.

(c) No person may carry aboard a passenger-carrying aircraft any package of

radioactive material which contains a large quantity (large radioactive source) of radioactivity (as defined in § 173.389 (b) of this subchapter), except as specifically approved by the Director, Office of Hazardous Materials Operations, Materials Transportation Bureau, Department of Transportation.

§ 175.710 Special requirements for fissile Class III radioactive materials.

(a) No person may carry aboard any aircraft any package of fissile Class III radioactive material (as defined in § 173.389(a)(3) of this subchapter), except as follows:

(1) On a cargo-only aircraft which has been assigned for the sole use of the consignor for the specific shipment of fissile radioactive material. Instructions for such sole use must be provided for in special arrangements between the consignor and carrier, with instructions to that effect issued with shipping papers; or

(2) On any aircraft on which there is no other package of radioactive materials required to bear one of the RADIOACTIVE labels described in §§ 172.437, 172.438, and 172.439 of this subchapter. Specific arrangements must be effected between the shipper and carriers, with instructions to that effect issued with the shipping papers; or

(3) In accordance with any other procedure specifically approved by the Director, Office of Hazardous Materials Operations, Materials Transportation Bureau.

301. Part 176 is revised to read as follows:

PART 176—CARRIAGE BY VESSEL

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AUTHORITY: 46 U.S.C. 170(7), 49 CFR 1.53 (f).

Subpart A—General

§ 176.1 Purpose and scope.

This part prescribes requirements in addition to those contained in Parts 171, 172, and 173 of this subchapter to be observed with respect to the transportation of hazardous materials by vessel.

§ 176.3 Unacceptable hazardous materials shipments.

(a) A carrier may not transport by vessel any shipment of a hazardous material that is not prepared for transportation in accordance with Parts 172 and 173 of this subchapter.

(b) A carrier may not transport by vessel any explosive or explosive composition described in § 176.5(c).

§ 176.5 Application to vessels.

(a) Except as provided in paragraphs (b), (e), and (f) of this section, this subchapter applies to each domestic or foreign vessel when in the navigable waters

of the United States, regardless of its character, tonnage, size, or service, and whether self-propelled or not, whether arriving or departing, underway, moored, anchored, aground, or while in dry dock.

(b) With the exception of paragraph (c) of this section, this subchapter does not apply to:

(1) A public vessel not engaged in commercial service;

(2) A vessel constructed or converted for the principal purpose of carrying flammable or combustible liquid cargo in bulk in its own tanks, when only carrying these liquid cargoes;

(3) A vessel of 15 gross tons or smaller when not engaged in carrying passengers for hire;

(4) A vessel used exclusively for pleasure;

(5) A vessel of 500 gross tons or smaller when engaged in fisheries;

(6) A tug or towing vessel except when towing another vessel having explosives, flammable liquids or flammable compressed gas on board on deck in which case the tug or towing vessel shall make such provisions to guard against and extinguish fire as the Coast Guard may prescribe; or

(7) A cable vessel, dredge, elevator vessel, fireboat, icebreaker, pile driver, pilot boat, welding vessel, salvage vessel, or wrecking vessel.

(c) 46 U.S. Code 170(3) prohibits the transportation, carriage, conveying, storing, stowing or using any of the following explosives on board any vessel to which this subchapter applies:

(1) Any fulminate or other detonating compound in bulk in dry condition.

(2) Any explosive composition that can ignite spontaneously or undergo marked decomposition when subjected for 48 consecutive hours to a temperature of 167 degrees F. (75 degrees C.).

(3) Any composition containing an ammonium salt and a chlorate or other like explosive.

(d) The bulk carriage of hazardous materials by water is governed by 46 CFR Subchapters D, I, O, and N.

(e) The transportation of military explosives on board vessels is governed by 46 CFR 146.29.

§ 176.9 "Order-Notify" or "C.O.D." shipments.

(a) A carrier may not transport Class A explosives or blasting caps which are—

(1) Consigned to "Order-notify" or "C.O.D.", except on a through bill of lading to a place outside the United States; or

(2) Consigned by the shipper to himself unless he has a resident representative to receive the shipment at the port of discharge.

§ 176.11 Exceptions.

(a) A shipment of hazardous materials (other than Class A explosives or radioactive materials) which upon arrival at a domestic port is not destined for transportation outside the port area may be transported in accordance with the packaging requirements of the International Maritime Dangerous Goods Code adopted by the Inter-governmental Maritime Consultative Organization (IMCO). (See also § 171.12 of this subchapter.)

(b) Canadian shipments and packages may be transported by vessel if they are transported in accordance with this subchapter. (See § 173.8 of this subchapter.)

(c) The requirements of this subchapter governing the transportation of combustible liquids do not apply to the transportation of combustible liquids in containers of 110 gallons or less on board vessels.

(d) A transport vehicle carrying hazardous materials may be transported on board a ferry vessel or carfloat, subject to the requirements specified in the table in § 172.101 of this subchapter and Subpart E of this part, if the hazardous materials are segregated and stowed within the vehicle in accordance with the applicab'e requirements of this subchapter.

§ 176.13 Responsibility for compliance.

Unless this subchapter specifically provides that another person must perform a duty, each carrier, including a connecting carrier, shall comply with all applicable regulations in this part, and shall thoroughly instruct his employees in relation thereto.

§ 176.15 Enforcement.

(a) An enforcement officer of the U.S. Coast Guard may at any time and at any place, within the jurisdiction of the United States, board any vessel for the purpose of enforcement of this subchapter.

(b) Under the authority of 46 U.S. Code 170(13) and in the manner provided therein, a collector of customs may detain a vessel which is in violation of this subchapter.

§ 176.18 Assignment and certification.

(a) The National Cargo Bureau, Inc., is authorized to assist the Coast Guard in administering this subchapter with respect to the following:

(1) Inspection of vessels for suitability for loading hazardous materials;

(2) Examination of stowage of hazardous materials;

(3) Making recommendations for stowage requirements of hazardous materials cargo; and

(4) Issuance of certificates of loading setting forth that the stowage of hazardous materials is in accordance with the requirements of 46 U.S.C. 170 and this subchapter.

(b) A certificate of loading issued by the National Cargo Bureau, Inc., may be accepted by the Coast Guard as prima facie evidence that the cargo is stowed in conformity with the requirements of 46 U.S.C. 170 and this subchapter.

Subpart B—General Operating Requirements

§ 176.24 Shipping papers.

A carrier may not transport a hazardous material by vessel unless the material is properly described on the shipping paper in the manner prescribed in Part 172 of this subchapter.

§ 176.27 Certificate.

(a) A carrier may not transport a hazardous material by vessel unless it has been certified by the shipper in accordance with § 172.204 of this subchapter.

(b) In the case of an import or export shipment of hazardous materials which will not be transported by rail, highway, or air, the shipper may certify on the bill of lading or other shipping paper that the hazardous material is properly classed, described, marked, packaged, and labeled according to Part 172 of this subchapter or in accordance with the regulations of the country of origin or destination.

§ 176.30 Dangerous cargo manifest.

(a) The master of a vessel transporting hazardous materials shall prepare a dangerous cargo manifest, list, or stowage plan. This document must be kept in a designated holder, on or near the vessel's bridge. It must contain the following information:

(1) Name of vessel and official number. (If the vessel has no official number, the international radio call sign must be substituted.);

(2) Nationality of vessel;

(3) Shipping name of each hazardous material on board, as given in the Hazardous Materials Table, § 172.101 of this subchapter or the "correct technical name" as given in the International Maritime Dangerous Goods Code published by IMCO. For other than a domestic shipment, when the shipping name of a material is an "n.o.s." entry, this entry must be qualified by the chemical name of the commodity in parentheses, e.g., "Corrosive material, n.o.s. (caprylyl chloride)";

(4) The number and description of packages (barrels, drums, cylinders, boxes, etc.) and gross weight for each type of packaging;

(5) Classification of the hazardous material in accordance with either:

(i) The Hazardous Materials Table, § 172.101; or

(ii) The Inter-governmental Maritime Consultative Organization's Dangerous Goods Code.

(6) Stowage location of the hazardous material on board the vessel.

(7) In the case of a vessel used for the storage of explosives or other hazardous materials, the following additional information is required:

(i) Name and address of vessel's owner;

(ii) Location of vessel's mooring;

(iii) Name of person in charge of vessel;

(iv) Name and address of the owner of the cargo; and

(v) A complete record, by time intervals of one week, of all receipts and disbursements of hazardous materials. The name and address of the consignor must be shown against all receipts and the name and address of the consignee against all deliveries.

(b) The hazardous material information on the dangerous cargo manifest must be the same as the information furnished by the shipper on his shipping

order or other shipper paper. The person who supervises the preparation of the manifest, list, or stowage plan shall ensure that the information is correctly transcribed, and shall certify to the truth and accuracy of this information to the best of his knowledge and belief by his signature and notation of the date prepared.

(c) The master, or a licensed deck officer designated by the master and attached to the vessel, or in the case of a barge, the person in charge of the barge, shall acknowledge the correctness of the dangerous cargo manifest, list, or stowage plan by his signature. The requirements of this paragraph do not apply to unmanned barges.

(d) Each carrier who transports or stores hazardous materials on a vessel shall retain for one year thereafter a copy of the dangerous cargo manifest, list, or stowage plan, and shall make that manifest or list available for inspection in accordance with § 176.36(b).

§ 176.31 Exemptions.

If a hazardous material is being transported by vessel under the authority of an exemption and a copy of the exemption is required to be on board the vessel, it must be kept with the dangerous cargo manifest.

§ 176.33 Labels.

Each carrier shall maintain an adequate supply of the labels required in Subpart E of Part 172 of this subchapter to replace those that become lost or detached. Replacement must be based on information taken from the shipping order, delivery receipt, or other shipping paper covering the shipment.

§ 176.36 Preservation of records.

(a) When this part requires shipping orders, manifest, cargo lists, stowage plans, reports, or any other papers, documents or similar records to be prepared, the carrier shall preserve them or copies of them in his place of business or office in the United States for a period of one year after their preparation.

(b) Any record required to be preserved must be made available upon request to an authorized representative of the Department of Transportation.

§ 176.39 Inspection of cargo.

(a) *Manned vessels.* (1) The master of a vessel transporting hazardous materials shall cause an inspection of each hold or compartment containing hazardous materials to be made after stowage is complete, and at least once every 24 hours thereafter, weather permitting, in order to ensure that the cargo is in a safe condition and that no damage caused by shifting, spontaneous heating, leaking, sifting, wetting, or other cause has been sustained by the vessel or its cargo since loading and stowage. This requirement does not require freight containers or individual barges to be opened. A vessel's holds equipped with smoke or fire detecting systems, having an automatic monitoring capability, need not be inspected except after stowage is complete and after periods of heavy weather.

(2) The master shall cause an entry to be made in the vessel's deck log book for each inspection of the stowage of hazardous materials performed.

(b) *Unmanned and magazine vessels.* An inspection of the cargo must be made after stowage has been completed to ensure that stowage has been accomplished properly and that there are no visible signs of damage to any packages or evidence of heating, leaking, or sifting. This inspection must be made by the individual who is responsible to the carrier and who is in charge of loading and stowing the cargo on the unmanned vessels or the individual in charge in the case of a magazine vessel.

(c) The master of each ocean-going vessel carrying hazardous materials shall, immediately prior to entering a port in the United States, cause an inspection of that cargo to be made.

(d) When inspecting a cargo of hazardous materials capable of evolving flammable vapors, any artificial means of illumination must be of an explosion-proof type.

§ 176.45 Emergency situations.

(a) When an accident occurs on board a vessel involving hazardous materials, and the safety of the vessel, its passengers or crew are endangered, the master shall adopt such procedures as will, in his judgment, provide maximum safety for the vessel, its passengers, and its crew. When the accident results in damaged packages or the emergency use of unauthorized packagings, these packages may not be offered to any forwarding carrier for transportation. The master shall notify the nearest District Commander, U.S. Coast Guard, and request instructions for disposition of the packages.

(b) Hazardous materials may be jettisoned only if the master believes this action necessary to prevent or substantially reduce a hazard to human life or reduce a substantial hazard to property.

§ 176.48 Situation requiring report.

(a) When a fire or other hazardous condition exists on a vessel transporting hazardous materials, the master shall notify the nearest District Commander as soon as possible and shall comply with any instructions given by the District Commander.

(b) When an incident occurs during transportation in which hazardous materials are involved, Hazardous Materials Incident Reports may be required. See § 171.15 and § 171.16 of this subchapter.

(c) If a package, container, portable tank, highway or railroad vehicle containing hazardous materials is jettisoned or lost, the master shall notify the nearest District Commander and the Comandant (GMHM) as soon as possible of the location, quantity, and type of the material.

§ 176.50 Acceptance of damaged or leaking packages.

A carrier may not transport by vessel any package that is so damaged as to permit the escape of its contents, that appears to have leaked, or that gives evidence of failure to properly contain the contents unless it is restored or repaired to the satisfaction of the master of the vessel. A package containing radioactive materials (other than low specific materials) may not be repaired or restored.

§ 176.52 Rejections of shipments in violation.

(a) A carrier may not knowingly transport by vessel any hazardous material offered under a false or deceptive name, marking, invoice, shipping paper or other declaration, or without the shipper furnishing written information about the true nature of the material at the time of delivery.

(b) If a shipment in violation is found in transit, the master of the vessel shall adopt procedures which in his judgment provide maximum safety to the vessel, its passengers and its crew and which are in compliance with § 176.45. If the vessel is in port, the material may not be delivered to any party, and the master shall immediately notify the nearest District Commander and request instructions for disposition of the material.

§ 176.54 Repairs involving welding or burning.

(a) Except as provided in paragraph (b) of this section, repairs or work involving welding or burning, or the use of power-actuated tools or appliances which may produce intense heat may not be undertaken on any vessel having on board explosives or other hazardous materials as cargo.

(b) Paragraph (a) of this section does not apply if—

(1) The repairs or work are approved by the local Coast Guard Captain of the Port or his authorized representative; or

(2) Emergency repairs to the vessel's main propelling or boiler plant or auxiliaries are necessary.

Subpart C—General Handling and Stowage

§ 176.57 Supervision of handling and stowage.

(a) Hazardous materials may be handled or stowed on board a vessel only under the direction and observation of a qualified person assigned for this duty.

(b) For a vessel engaged in voyages coastwise, or on rivers, bays, sounds or lakes, including the Great Lakes when the voyage is not foreign-going, the person may be an employee of the carrier and assigned to this duty by the carrier, or a licensed officer attached to the vessel and assigned by the master of the vessel.

(c) For a domestic vessel engaged in a foreign-going or intercoastal voyage, the person must be an officer possessing an unexpired license issued by the U.S. Coast Guard and assigned to this duty by the carrier or master of the vessel.

(d) For a foreign vessel, the person must be an officer of the vessel assigned to this duty by the master of the vessel.

§ 176.58 Preparation of the vessel.

Each hold or compartment in which hazardous materials are to be transported must be swept clean of all debris before the hazardous materials are

stowed therein. Bilges must be examined and all residue of previous cargo removed.

§ 176.60 "No Smoking" signs.

When smoking is prohibited during the loading, stowing, storing, transportation, or unloading of hazardous materials by this part, the carrier and the master of the vessel are jointly responsible for posting "NO SMOKING" signs in conspicuous locations.

§ 176.63 Stowage locations.

(a) The table in § 172.101 of this subchapter specifies generally the locations authorized for stowage of the various hazardous materials on board vessels. This part prescribes additional requirements with respect to the stowage of particular hazardous materials shipments in those authorized. This section sets forth the basic physical requirements for the authorized locations.

(b) To qualify as "on deck" stowage, the location must be on the weather deck. If it is in a house on the weather deck, it must have a permanent structural opening to the atmosphere, such as a door, hatch companionway or manhole, and must be vented to the atmosphere. It may not have any structural opening to any living quarters, cargo, or other compartment unless the opening has means for being closed off and secured. Any deck house containing living quarters, a steering engine, a refrigerating unit, a refrigerated stowage box, or a heating unit may not be used unless that area is isolated from the cargo stowage area by a permanent, and tight metallic bulkhead. Stowage in a shelter or 'tween deck is not considered to be "on deck". A barge which is vented to the atmosphere and is stowed on deck on a barge-carrying ship is considered to be "on deck". "On deck" stowage must be protected from the direct rays of the sun by means of structural erections or awnings.

(c) To qualify as "under deck" stowage, the location must be in a hold or compartment below the weather deck capable of being ventilated and allotted entirely to the carriage of cargo. It must be bounded by permanent steel decks and bulkheads or the shell of the vessel. The deck openings must have means for effectively closing the hold or compartment against the weather, and in the case of superimposed holds, for effectively closing off each hold. A hold or compartment containing a crew passage formed by battens or by mesh or wire screen bulkhead may not be used for the stowage of any hazardous material unless a watchman is provided for this area.

(d) To qualify as "under deck away from heat", the location must be under deck and have built-in means for ventilation. If it is subject to heat from any artificial source, it only qualifies for the stowage of those hazardous materials for which "on deck" stowage is authorized.

§ 176.69 General stowage requirements for hazardous materials.

(a) Hazardous materials (except as provided in (c) of this section) and ORM must be stowed in a manner that will facilitate inspection during the voyage, its removal from a potentially dangerous situation, and the removal of packages in case of fire.

(b) Each package marked "THIS SIDE UP" must be stowed so as to remain in the position indicated during transportation.

(c) If a vessel designed for and carrying hazardous materials in freight containers or a vessel designed for and carrying hazardous materials in barges is equipped with a fixed fire extinguishing and fire detection system, the freight containers or barges need not be stowed in the manner required by paragraph (a) of this section. In addition, if fire fighting equipment capable of reaching and piercing the freight container or barge shall is on board the vessel the freight containers or barges may be stowed on deck.

§ 176.72 Handling of break-bulk hazardous materials.

(a) A metal bale hook may not be used for handling any package of hazardous materials.

(b) The use of equipment designed to lift or move cargo by means of pressure exerted on the packages may not be used for handling any package of hazardous materials if the device can damage the package or the package is not designed to be moved in that manner.

(c) Pallets, slings, cargo nets and other related equipment used in loading packages of hazardous materials must give adequate support to the packages. The packages must be contained so that they are not able to fall during loading.

§ 176.74 On deck stowage of break-bulk hazardous materials.

(a) Packages containing hazardous materials must be secured by enclosing in boxes, cribs or cradles and proper lashing by use of wire rope, strapping or other means, including shoring and bracing, or both. Lashing of deck cargo is permitted if eye pads are used to attach the lashings. Lashings may not be secured to guard rails. Bulky articles must be shored.

(b) A packaging susceptible to weather or water damage must be protected so that it will not be exposed to the weather or to sea water.

(c) Not more than fifty percent of the total open deck area may be used for stowage of hazardous materials (except ORM material).

(d) Fireplugs, hoses, sounding pipes, and access to these must be free and clear of all cargo.

(e) Crew and passenger spaces and areas set aside for the crew's use may not be used to stow any hazardous material.

(f) A hazardous material may not be stowed within a horizontal distance of 25 feet of an operating or embarkation point of a lifeboat.

(g) Hazardous materials must be stowed to permit safe access to the crew's quarters and to all parts of the deck required in navigation and necessary working of the vessel.

(h) When runways for use of the crew are built over stowed hazardous materials, they must be constructed and fitted with rails and lifelines so as to afford complete protection to the crew when in use.

§ 176.76 Highway vehicles, railroad vehicles, freight containers, and portable tanks containing hazardous materials.

(a) Except as provided in paragraphs (b) through (f) of this section, hazardous materials (other than Class A explosives) authorized to be transported by vessel may be carried on board a vessel in a highway vehicle, railroad vehicle, or freight container subject to the following conditions:

(1) The material must be in proper condition for transportation according to the requirements of this subchapter;

(2) All packages in the transport vehicle or container must be secured to prevent movement in any direction. However, vertical restraint is not required if the shape of the packages and the stuffing pattern precludes shifting of the load;

(3) Bulkheads made of dunnage which extend to the level of the cargo must be provided unless the packages are stowed flush with the sides or ends;

(4) Dunnage must be secured to the floor when the cargo consists of dense materials or heavy packages;

(5) Each package marked "THIS SIDE UP" must be so stowed;

(6) Any slack spaces between packages must be filled with dunnage;

(7) The weight in a container must be distributed throughout as evenly as possible and the maximum permissible weight must not be exceeded.

(8) Adjacent levels of baggaged and baled cargo must be stowed in alternate directions so that each tier binds the tier above and below it.

(9) Packages containing solids may not be stowed on top of packages containing liquids.

(10) The lading must be contained entirely within the freight container or vehicle body without overhang or projection except that oversized machinery such as tractors or vehicles with batteries attached may overhang or project outside the intermodal container provided all of that portion of the lading that consists of hazardous materials is contained entirely within the freight container. No open-bed container or vehicle is permitted to carry hazardous materials unless it is equipped with a means of properly securing the lading.

(b) A highway vehicle containing hazardous materials may be carried only on board a trailership, ferry vessel or a carfloat.

(c) A railroad vehicle containing hazardous materials may be carried only on board a trainship, railroad car ferry or a carfloat.

(d) A transport vehicle or freight container equipped with heating or refrigeration equipment may be operated on board a vessel. However, the equipment may not be operated in any hold or compartment in which any flammable liquid

or gas is stowed on deck unless separated by at least 30 feet from any flammable liquid or gas. Any heating or air conditioning equipment having a fuel tank containing a flammable liquid or gas may be stowed only "on deck". Equipment electrically powered and designed to operate within an environment containing flammable vapors may be operated below deck in a hold or compartment containing a flammable liquid or gas. (See § 176.79.)

(e) A transport vehicle, loaded with any hazardous material which is required to be stowed "on deck" by § 172.101 of this subchapter, may be stowed one deck below the weather deck when transported on a trainship or trailership which is unable to provide "on deck" stowage because of the vessel's design. Otherwise, the transport vehicle or container must be transported "on deck".

(f) Each transport vehicle, freight container, and portable tank being transported by vessel must be placarded in accordance with the requirements of Subpart F of Part 172 of this subchapter.

(g) A hazardous material may be carried on board a vessel in a portable tank subject to the following conditions:

(1) The material must be in proper condition for transportation according to the requirements of this subchapter.

(2) The portable tank may not exceed 55,000 pounds gross weight.

(3) When loaded, the portable tank must be stowed on deck unless it contains only an ORM, a hazardous material which is water soluble but not water reactive, or a combustible liquid with a flashpoint above 141 degrees F.

(4) ORM and corrosive materials must be stowed as authorized in the Hazardous Materials Table in § 172.101 of this subchapter.

(5) Aluminum, magnesium and their alloys are specifically prohibited as materials of construction of portable tanks.

§ 176.77 Stowage of barges containing hazardous materials on board barge-carrying vessels.

(a) A barge which contains hazardous materials may be transported on board a barge-carrying vessel if it is stowed in accordance with the requirements of this section.

(b) A barge which contains hazardous materials for which only "on deck" stowage is authorized must be stowed above the weather deck and be vented to the atmosphere.

(c) A barge which contains hazardous materials for which both "on deck" and "below deck" storage is authorized may be stowed above or below the weather deck.

§ 176.78 Use of power-operated industrial trucks on board vessels.

(a) A truck may not be used on board a vessel in a space containing a hazardous material unless it is a power-operated industrial truck and complies with the requirements of this section.

(b) Each truck must have a specific designation of Underwriter's Laboratories or Factory Mutual Laboratories. Any repair or alteration to a truck must be equivalent to that required on the original designation.

(c) *Description of designations.* The recognized testing laboratory type designations are as follows:

(1) An "E" designated unit is an electrically-powered unit that has minimum acceptable safeguards against inherent fire hazards.

(2) An "EE" designated unit is an electrically-powered unit that has, in addition to all the requirements for the "E" unit, the electric motor and all other electrical equipment completely enclosed.

(3) An "EX" designated unit is an electrically-powered unit that differs from the "E" and "EE" unit in that the electrical fittings and equipment are so designed, constructed, and assembled that the unit may be used in certain atmospheres containing flammable vapors or dusts.

(4) A "G" designated unit is a gasoline-powered unit having minimum acceptable safeguards against inherent fire hazards.

(5) A "GS" designated unit is a gasoline-powered unit that is provided with additional safeguards to the exhaust, fuel, and electrical systems.

(6) An "LP" designated unit is similar to a "G" unit except that it is powered by liquefied petroleum gas instead of gasoline.

(7) An "LPS" designated unit is a unit similar to a "GS" unit except that liquefied petroleum gas is used for fuel instead of gasoline.

(8) A "D" designated unit is a unit similar to a "G" unit except that it is powered by a diesel engine instead of a gasoline engine.

(9) A "DS" designated unit is a unit powered by a diesel engine provided with additional safeguards to the exhaust, fuel, and electrical systems.

(d) *Explosives.* A truck may not be used in a hold or compartment containing explosives unless its use is approved by the Commandant (GMHM). In a space in which packaged small arms ammunition without explosive bullets is stowed, an approved power-operated industrial truck (except "E", "G", or "LP") may not be used unless its use is approved by the Captain of the Port when the truck is to be so used.

(e) *Other hazardous materials.* (1) Only an "EX", "EE", "GS", "LPS", or "DS" truck may be used in a hold or compartment containing flammble liquids, flammable compressed gases, flammable solids, oxidizers, organic peroxides, articles of a fibrous nature, or bulk sulfur.

(2) Only a designated truck may be used to handle any other hazardous material not covered in paragraph (d) or (e)(1) of this section.

(f) *Minimum safety features.* In addition to the construction and design safety features required, each truck must have at least the following minimum safety features:

(1) The truck must be equipped with a warning horn, whistle, gong, or other device that may be heard clearly above normal shipboard noises.

(2) When the truck operation may expose the operator to danger from a falling object, the truck must be equipped with a driver's overhead guard. When the overall height of the truck with forks in the lowered position is limited by head room the overhead guard may be omitted. This overhead guard is only intended to offer protection from impact of small packages, boxes, bagged material, or similar hazards.

(3) A fork lift truck which handles small objects or unstable loads must be equipped with a load backrest extension having height, width, and strength sufficient to prevent any load, or part of it, from falling toward the mast is in a position of maximum backward tilt. It must be constructed in a manner that does not interfere with good visibility.

(4) The forks on a fork lift truck must be secured to the carriage so as to prevent any unintentional lifting of the toe which could create a hazard. The forks may not display permanent deformation when subjected to a test load of three times the rated capacity.

(5) Each fork extension or other attachment must be secured to prevent unintentional lifting or displacement on primary forks.

(6) Tires extending beyond the confines of the truck shall be provided with a guard to prevent the tires from throwing particles at the operator.

(7) Unless the steering machanism is a type that prevents road reactions from causing the steering handwheel to spin, a mushroom type steering knob must be used to engage the palm of the operator's hand, or the steering mechanism must be arranged in some other manner to prevent injury. The knob must be mounted within the perimeter of the wheel.

(8) All steering controls must be confined within the clearance of the truck or guarded so that movement of the controls will not result in injury to the operator when passing stanchions, obstructions or other.

(g) *Special operating conditions.* (1) A truck may not be used on board a vessel unless prior notification of its use is given to the master or senior deck officer on board.

(2) Before a truck is operated on board a vessel, it must be in a safe operating condition as determined by the master or senior deck officer on board.

(3) Any truck that emits sparks or flames from the exhaust system must immediately be removed from service and may not be returned to service until the cause of these sparks or flames has been eliminated.

(4) A truck may not be operated on board a vessel when the temperature of any part of the truck is found to be in excess of a safe operating temperature.

(5) All truck motors must be shut off immediately when an emergency condition arises on board a vessel.

(6) All truck motors must be shut off immediately when a breakage or leakage of packages containing flammable liquids or gases, flammable solids, oxidizers, or organic peroxides occurs or is discovered.

(7) The rated capacity of the truck must be posted on the truck at all times in a conspicuous place. This capacity may not be exceeded.

(8) At least one Coast Guard approved marine type size 1 Type B, or UL approved 5BC portable fire extinguisher, or its approved equivalent, must be affixed to the truck in a readily accessible position or must be kept in close proximity, available for immediate use.

(9) The vessel's fire fighting equipment, both fixed (where installed) and portable, must be kept ready for immediate use in the vicinity of the space being worked.

(h) *Refueling.* (1) A truck using gasoline as fuel may not be refueled in the hold or on the weather deck of a vessel unless a portable non-spilling fuel handling system of not over five gallons capacity is used. Gasoline may not be transferred to a portable non-spilling fuel handling device on board the vessel.

(2) A truck using liquefied petroleum gas as fuel may not be refueled in the hold or on the weather deck of a vessel unless it is fitted with a removable tank and the hand-operated shutoff valve of the depleted tank is closed. In addition, the motor must be run until it stalls from lack of fuel and then the hand-operated shut off valve closed before the quick disconnect fitting to the fuel tank is disconnected.

(3) A truck using diesel oil as fuel may not be refueled on the weather deck or in the hold of a vessel unless a portable container of not over a five gallon capacity is used. A truck may be refueled or a portable container may be refilled from a larger container of diesel fuel on the weather deck of a vessel if a suitable pump is used for the transfer operation and a drip pan of adequate size is used to prevent any dripping of fuel on the deck.

(4) Refueling must be performed under the direct supervision of an experienced and responsible person specifically designated for this duty by the person in charge of the loading or unloading of the vessel.

(5) Refueling may not be undertaken with less than two persons specifically assigned and present for the complete operation, at least one of whom must be experienced in using the portable fire extinguishers required in the fuel area.

(6) At least one Coast Guard approved marine type size 1 Type B or UL approved 5BC portable fire extinguisher or its approved equivalent, must be provided in the fueling area. This is an addition to the extinguisher required by paragraph (g)(8) of this section.

(7) The location for refueling trucks must be designated by the master or senior deck officer on board the vessel. "NO SMOKING" signs must be conspicuously posted in the area.

(8) The location designated for refueling must be adequately ventilated to insure against accumulation of any hazardous concentration of vapors. When a truck is being refueled, the ventilation requirements of § 176.79 apply.

(9) Before any truck in a hold is refueled or before any fuel handling device or unmounted liquefied petroleum gas cylinder is placed in a hold, the motors of all trucks in the same hold must be stopped.

(10) All fuel handling devices and unmounted liquefied petroleum gas containers must be removed from a hold before any truck motor is started and the trucks are placed in operation in that hold.

(i) *Replacing batteries.* Batteries for electrically powered trucks and for the ignition systems of internal combustion powered trucks may be changed in the hold of a vessel subject to the following conditions:

(1) Only suitable handling equipment may be employed.

(2) Adequate precautions must be taken to avoid damage to the battery, short circuiting of the battery, and spillage of the electrolyte.

(j) *Charging of batteries.* Batteries of industrial trucks may be recharged in a hold of a vessel subject to the following conditions:

(1) The batteries must be housed in a suitable, ventilated, portable metal container with a suitable outlet at the top for connection of a portable air hose, or must be placed directly beneath a suitable outlet at the top for connection of a portable air hose. The air hose must be permanently connected to an exhaust duct leading to the open deck and terminate in a gooseneck or other suitable weather head. If natural ventilation is not practicable or adequate, mechanical means of exhaust must be employed in conjunction with the duct. The air outlet on the battery container must be equipped with an interlock switch so arranged that the charging of the battery cannot take place unless the air hose is properly connected to the box.

(2) If mechanical ventilation is used, an additional interlock must be provided between the fan and the charging circuit so that the fan must be in operation in order to complete the charging circuit for operation. It is preferable that this interlock switch be of a centrifugal type driven by the fan shaft.

(3) The hold may not contain any hazardous materials.

(4) The charging facilities may be part of the truck equipment or may be separate from the truck and located inside or outside the cargo hold. The power supply or charging circuit (whichever method is used) must be connected to the truck by a portable plug connection of the break-away type. This portable plug must be so engaged with the truck battery charging outlet that any movement of the truck away from the charging station will break the connection between the plug and receptacle without exposing any live parts to contact with a conducting surface or object and without the plug falling to the deck where it may become subject to damage.

(5) All unmounted batteries must be suitably protected or removed from an area in the hold of the vessel before any truck is operated in that area.

(k) *Stowage of power-operated industrial trucks on board a vessel.* (1) Trucks may be stowed in any location on board a vessel subject to the following conditions:

(i) Each gasoline-powered truck must have all the fuel expended from the fuel system.

(ii) Each liquefied petroleum gas-operated truck must have the fuel tank removed and all the fuel expended from the fuel system.

(2) Any truck not meeting the conditions set forth in paragraph (k)(1) of this section must be stowed on the open deck except for intervals such as lunch hours, between work shifts, and interdock and intraport movements. If a truck is stowed in a fixed metal enclosure located on or above the weather deck, this enclosure must have access from the weather deck only and must have adequate ventilation arranged to remove vapors from both the upper and lower portions of the space.

(l) *Packaging and stowage of fuel on board a vessel.* (1) *Packaging.* Flammable liquids and gases to be used as fuels for trucks must be packaged in DOT specification containers, A.S.M.E. containers, or portable safety containers approved by a recognized testing laboratory and authorized for the contents.

(2) *Marking and labeling.* The appropriate DOT label must be affixed to each container of flammable liquid or flammable gas.

(3) *Stowage.* Each container must be stowed on or above the weather deck as designated by the master. However, a DOT specification container, A.S.M.E. container, or portable safety container having a capacity of five gallons or less and approved by a recognized testing laboratory may be stowed below deck in a paint locker and diesel fuel may be stowed in any location designated by the master.

§ 176.79 Spaces exposed to carbon monoxide or other hazardous vapors.

When hazardous materials are transported by vessel in an enclosed space which is exposed to carbon monoxide or other hazardous vapors from exhausts of power-operated industrial trucks or other mechanized equipment, the space must be provided with adequate ventilation to prevent the accumulation of dangerous vapors. The senior deck officer shall insure that a test of the carbon monoxide content of the atmosphere

is made as frequently as conditions require to detect the presence of any dangerous concentration of vapors in areas where persons may be working. The test must be made by a person acquainted with the test equipment and procedure. The carbon monoxide concentration in any hold or intermediate deck where any person is working may not exceed 50 parts per million (0.005 percent) as a time weighted average. Persons may not be permitted to remain in any hold or intermediate deck where the concentration exceeds 75 parts per million (0.0075 percent). Portable blowers of adequate size and location may be used to remove any vapors not removed by installed ventilation systems.

Subpart D—General Segregation Requirements

§ 176.80 Application.

(a) This subpart sets forth segregation requirements in addition to any segregation requirements set forth elsewhere in this subchapter.

(b) This subpart does not apply to:

(1) Materials classed as ORM–D, and

(2) Hazardous materials in limited quantities when loaded in transport vehicles and freight containers.

§ 176.83 Segregation requirements for cargo vessels and passenger vessels.

(a) The following table (Table I) specifies the categories of explosives which may not be loaded or stowed together within the same hold or compartment. The letter "X" at an intersection of a horizontal and vertical column indicates that these categories may not be stowed together in the same hold or compartment.

The symbol X at an intersection of horizontal and vertical columns shows that these articles must not be loaded or stowed together.

	Low explosives or black powder	High explosives or propellant explosives, Class A	Initiating or priming explosives, wet; diazodinitrophenol, fulminate of mercury, guanyl nitrosamino guanylidene hydrazine, lead azide, lead styphnate, nitro mannite, nitroguanidine, pentaerythrite tetranitrate, tetrazene, lead mononitroresorcinate	Blasting caps, with or without safety fuse (including electric blasting caps) detonating primers	Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles or shells, ammunition for small arms with incendiary projectiles; ammunition for small arms with explosive projectiles; rocket ammunition with explosive projectiles; gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles[1]; boosters (explosive); bursters (explosive); and supplementary charges (explosive) without detonators.[2]	Explosive projectiles; bombs; torpedoes; mines; rifle or hand grenades (explosive); jet thrust units (jato), Class A; igniters, jet thrust, Class A; rocket motors; Class A; igniters, rocket motor, Class A.[3]	Detonating fuses, Class A explosives, with or without radioactive components	Ammunition for cannon with empty, inert-loaded or solid projectiles, or without projectiles; rocket ammunition with empty, inert-loaded or solid projectiles	Propellant explosives, class B, jet thrust units (jato), class B; igniters, jet thrust, class B; rocket motors, class B; rocket captons (liquid), class B; igniters, rocket motor, class B; starter cartridges, jet engine, class B	Fireworks, special, or railway torpedoes	Small arms ammunition	Primers for cannon or small arms, empty cartridge bags, black powder igniters, empty cartridge cases, primed, empty grenades, primed, combination primers or percussion caps, toy caps, explosive cable cutters, explosive rivets	Percussion fuses, tracer fuses or tracers	Time, combination, or detonating fuses Class C explosive	Cordeau detonant fuse, safety squibs, fuse lighters, fuse igniters, delay electric igniters, detonic squibs, flashless ballistic fuse or igniter cord	Fireworks, common, highway fuses or railway fuses
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Class A Explosives																
1 Low explosives or black powder			X				X			X						X
2 High explosives or propellant explosives, Class A			X	X			X			X						X
3 Initiating or priming explosives, wet; diazodinitrophenol, fulminate of mercury, guanyl nitrosamino guanylidene hydrazine, lead azide, lead styphnate, nitro mannite, nitroguanidine, pentaerythrite tetranitrate, tetrazene, lead mononitroresorcinate	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
4 Blasting caps, with or without safety fuse (including electric blasting caps), detonating primers		X	X		X	X				X						X
5 Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles or shells, ammunition for small arms with incendiary projectiles; ammunition for small arms with explosive projectiles; rocket ammunition with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles[1]; boosters (explosive); bursters (explosive); and supplementary charges (explosive) without detonators[2]			X	X			X			X						X
6 Explosive projectiles; bombs; torpedoes; mines; rifle or hand grenades (explosive); jet thrust units (jato), Class A; igniters jet thrust, Class A; rocket motors Class A; igniters rocket motor Class A[3]			X	X			X			X						X
7 Detonating fuses, class A explosives, with or without radioactive components		X	X		X	X				X						X

See footnotes at end of table.

The symbol X at an intersection of horizontal and vertical columns shows that these articles must not be loaded or stowed together.

		1 Low explosives or black powder	2 High explosives or propellant explosives, Class A	3 Initiating or priming explosives: wet; diazodinitrophenol, fulminate of mercury, guanyl nitrosamino guanylidene hydrazine, lead azide, lead styphnate, nitro mannite, nitroguanidine, pentaerythrite tetranitrate, tetrazene, lead mononitroresorcinate	4 Blasting caps, with or without safety fuse (including electric blasting caps) detonating primers	5 Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles or shells, ammunition for small arms with incendiary projectiles; ammunition for small arms with explosive projectiles; rocket ammunition with explosive projectiles, gas projectiles,[1] smoke projectiles, incendiary projectiles, illuminating projectiles; boosters (explosive); bursters (explosive); and supplementary charges (explosive) without detonators[2]	6 Explosive projectiles: bombs, torpedoes; mines; rifle or hand grenades (explosive); jet thrust units (jato), Class A; igniters, jet thrust Class A; rocket motors, Class A; igniters, rocket motor, Class A.	7 Detonating fuzes, Class A explosives, with or without radioactive components	8 Ammunition for cannon with empty, inert-loaded or solid projectiles, or without projectiles; rocket ammunition with empty projectiles, inert-loaded or solid projectiles
	Class B Explosives								
8	Ammunition for cannon with empty, inert-loaded or solid projectiles, or without projectiles; rocket ammunition with empty, inert-loaded or solid projectiles	---	---	X	---	---	---	---	---
9	Propellant explosives, class B, jet thrust units (jato), class B; igniters, jet thrust, class B; rocket motors, class B; rocket engines (liquid), class B; igniters, rocket motor, class B; starter cartridges jet engine, class B	---	---	X	---	---	---	---	---
10	Fireworks, special	X	X	X	X	X	X	X	---
	Class C Explosives								
11	Small arms ammunition or cartridges, practice ammunition[3]	---	---	X	---	---	---	---	---
12	Primers for cannon or small arms, empty cartridge bags, black powder igniters, empty cartridge cases, primed, combination primers or percussion caps, toy caps, explosive cablecutters, explosive rivets	---	---	X	---	---	---	---	---
13	Percussion fuzes, tracer fuzes or tracers	---	---	X	---	---	---	---	---
14	Time, combination or detonating fuses, class C explosives	---	---	X	---	---	---	---	---
15	Cordeau detonant fuse, safety squibs, fuse lighters, fuse igniters, delay electric igniters, electric squibs, instantaneous fuse or igniter cord	---	---	X	---	---	---	---	---
16	Fireworks, common, highway fusees or railway fusees	X	X	X	X	X	X	X	---

[1] Explosives, class A, and explosives, class B, must not be loaded or stowed with chemical ammunition containing incendiary charges or white phosphorus either with or without bursting charges. Chemical ammunition of the same classification containing incendiary of white phosphorus may be loaded and stowed together.

[2] Bursters (explosive), boosters (explosive), or supplementary charges (explosive) without detonators when shipped by, to or for the Departments of the Army, Navy and Air Force of the United States Government may be stowed with any of the articles named, except those in columns 3, 4, 10, 16, 17, 18, 19, 20, 21, 22, 23, and 24.

(b) The following table (Table II) specifies the minimum separation requirements that apply when transporting different classes of hazardous materials on board a vessel, other than a ferry vessel. The symbols used in the table below mean the following:

(1) "1"—Away from.

(2) "2"—Separated from.

(3) "3"—Separated by a complete cargo compartment or hold from.

(4) "4"—Separated longitudinally by an intervening complete cargo compartment or hold from.

(5) "0"—No general segregation specified; individual entries in the Hazardous Material Table in § 172.101 of this subchapter should be consulted.

(6) "•"—Consult Table I of this section for segregation requirements between different explosives.

TABLE II

		1	2(a)	2(b)	3	4(a)	4(b)	4(c)	5(a)	5(b)	6	7	8	9
Explosives	1	(*)	4	2	4	4	4	4	4	4	2	2	4	0
Flammable compressed gases	2(a)	4	----	0	2	1	2	1	2	4	0	2	1	0
Nonflammable compressed gases	2(b)	2	0	----	2	0	1	0	0	2	0	1	0	0
Flammable or Combustible liquids	3	4	2	2	---	2	2	2	2	3	0	2	1	0
Flammable solids	4(a)	4	1	0	2	----	1	1	1	2	1	2	1	0
Flammable solids labeled spontaneously combustible	4(b)	4	2	1	2	1	----	1	2	2	1	2	1	0
Flammable solids labeled dangerous when wet	4(c)	4	1	0	2	1	1	----	2	2	1	2	1	0
Oxidizers	5(a)	4	2	0	2	1	2	2	----	2	1	1	2	0
Organic peroxides	5(b)	4	4	2	3	2	2	2	2	----	1	2	2	0
Class A or Class B Poisons or Irritating materials	6	2	0	0	0	1	1	1	1	1	---	0	0	0
Radioactive materials	7	2	2	1	2	2	2	2	1	2	0	---	2	0
Corrosive materials	8	4	1	0	1	1	1	1	2	2	0	2	---	0
Other regulated (ORM) materials	9	0	0	0	0	0	0	0	0	0	0	0	0	---

(c) *Definition of terms.*

(1) *Legend.*

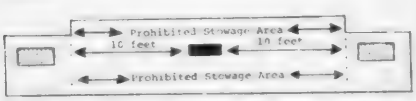
(i) Reference package * * *

(ii) Incompatible package * * *

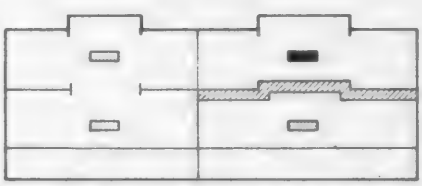
(iii) Deck resistant to liquid and fire * * *

NOTE: Solid vertical lines represent transverse watertight bulkheads between holds.

(2) *Away from.* "Away from" means effectively segregated so that materials may not interact dangerously in the event of an accident. These materials may be stowed in the same cargo compartment, hold, deck area or barge provided a minimum horizontal separation of 10 feet, projected vertically, is provided.

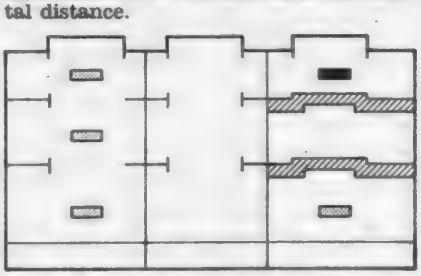


(3) *Separate from.* (i) "Separate from" means in separate holds when stowed "under deck". If the intervening deck is resistant to fire and liquid, a vertical separation, i.e., in different cargo compartments, is considered equivalent to this requirement. For "on deck" stowage, "away from" segregation is authorized.



(ii) On barge-carrying vessels, separate barges are required if the barges are constructed of steel. Otherwise separate holds are required.

(4) *Separate by a complete cargo compartment or hold from.* (i) "Separate by a complete cargo compartment of hold from" means either a vertical or horizontal separation. If the decks are not resistant to fire and liquid, a longitudinal separation by an intervening complete cargo compartment is required. For "on deck" stowage this segregation means a separation by a corresponding horizontal distance.

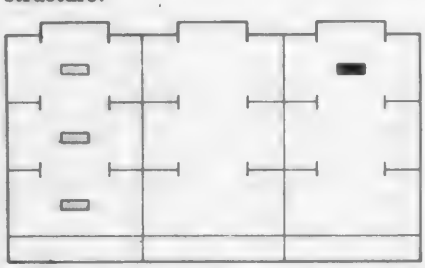


(ii) For barges aboard barge-carrying vessels, the following requirements apply:

(A) For barges loaded on ships having vertical holds, separate barge holds are required.

(B) For barges loaded on ships having horizontal barge levels, separate barge levels are required.

(5) *Separate longitudinally by an intervening complete cargo compartment or hold or engine room from.* (i) "Separate longitudinally by an intervening complete cargo compartment or hold or engine room from" means a horizontal separation by a complete intervening hold (two intervening bulkheads) or engine room. Vertical separation alone does not meet this requirement. For "on deck" stowage, this segregation means a separation by the vessel's bridge or superstructure:



(ii) For barges aboard barge-carrying vessels the following requirements apply:

(A) For barges loaded on ships having vertical holds, separation by an intervening barge hold or engine room is required.

(B) For barges loaded on ships having horizontal barge levels, separate barge levels and a longitudinal separation by at least two intervening barges are required.

(d) In applying the minimum separation requirements specified in Table II to

freight containers containing hazardous materials, the following additional requirements apply:

(1) *Class segregation.* Materials for which any segregation is specified in Table II may not be stowed in the same freight container.

(2) *Vertical stowage requirements.* Freight containers either closed or open may not be stowed in the same vertical line when segregation is required unless separated by a deck resistant to fire and liquid. When a solid substance is required to be stowed "Away from" another substance, it may be stowed above the other provided a minimum distance of eight feet intervenes. When "Separate by a complete cargo compartment or hold from" is required, freight containers separated by a deck resistant to fire and liquid may not be stowed in the same vertical line unless two such decks intervene.

(3) *Horizontal stowage requirements.* (i) "Away from"—

(A) For closed freight containers stowed on or under deck there are no restrictions in regard to freight container location in relation to other freight containers.

(B) For open containers stowed on or under deck, a minimum separation of 20 feet must be provided in the fore and aft direction unless separated by a bulkhead resistant to fire and water. A minimum athwartships separation of 8 feet must be provided.

(ii) "Separated from"—(A) For closed freight containers on or under deck a fore and aft separation of at least 20 feet must be provided unless separated by a bulkhead resistant to fire and water. A minimum athwartships separation of 16 feet must be provided.

(B) For open freight containers stowed on deck a minimum separation of 20 feet must be provided in the fore and aft direction and a minimum separation of 16 feet must be provided in the athwartships direction.

(C) Open freight containers stowed under deck must be separated by a bulkhead resistant to fire and water.

(iii) "Separate by a complete cargo compartment or hold from"—(A) For closed or open freight containers on deck a minimum separation of 20 feet must be provided in the fore and aft direction and a minimum separation of 24 feet must be provided in the athwartships direction.

(B) Closed freight containers under deck must be segregated by one bulkhead resistant to fire and water.

(C) Open freight containers under deck must be segregated by two bulkheads resistant to fire and water.

(iv) "Separated longitudinally by an intervening complete cargo compartment or hold from"—(A) Closed or open freight containers on deck must be separated by a distance of 80 feet.

(B) Closed freight containers under deck must be separated by at least two bulkheads resistant to fire and water or one bulkhead resistant to fire and water and a total distance of at least 80 feet provided the containers are not stowed less than 20 feet from the intervening bulkhead.

(C) Open freight containers under deck must be separated by at least two bulkheads resistant to fire.

(e) In applying the minimum separation requirements specified in Table II to portable tanks and railroad and highway vehicles containing hazardous materials, paragraph (d) of this section pertaining to freight containers applies.

(f) A ferry vessel (when operating either as a passenger or cargo vessel) which cannot provide the type of separation required in this section may carry incompatible hazardous materials in separate highway or railroad vehicles if they are stowed to give the maximum possible separation.

Subpart E—Special Requirements for Transport Vehicles Loaded With Hazardous Materials and Transported on Board Ferry Vessels

§ 176.88 Application.

The requirements in this subpart are applicable to transport vehicles containing hazardous materials being transported on board ferry vessels and are in addition to any prescribed elsewhere in this subchapter.

§ 176.89 Control of transport vehicles.

(a) A transport vehicle containing hazardous materials may be transported on board a ferry vessel, subject to the following conditions:

(1) The operator or person in charge of the vehicle shall deliver to the vessel's representative a copy of the shipping papers and certificate required by § 176.24 and § 176.27;

(2) The vehicle shall be placed at the location indicated by the vessel's representative;

(3) The parking brakes of the vehicle shall be set securely to prevent movement;

(4) The motor of a highway vehicle shall be shut off and not restarted until the vessel has completed its voyage and docked;

(5) All vehicle lights shall be cut off and not relighted until the vessel has completed its voyage and docked;

(6) The operator of a highway vehicle shall remain with the vehicle;

(7) No repairs or adjustments must be made to the vehicle while it is on the vessel;

(8) No hazardous materials are to be released from the vehicle; and

(9) Any instructions given by the vessel's representative during the voyage, and during "roll on" and "roll off" operations must be observed.

(b) Smoking by any person in or around a vehicle is prohibited.

§ 176.90 Private automobiles.

A private automobile which is carrying any explosive (except permitted fireworks or small arms ammunition) may not be transported on a passenger-carrying ferry vessel unless the explosive is in compliance with packaging, labeling, marking, and certification requirements of this subchapter. Permitted fireworks and small arms ammunition may be carried without the required packaging, labeling, marking, or certification if they are in tight containers.

§ 176.91 Motorboats.

A motorboat may be transported on board a ferry vessel with gasoline in the tank and two other containers not exceeding six gallons capacity each if they are in the motorboat, closed, and in good condition.

§ 176.92 Cylinders laden in vehicles.

Any cylinder of compressed gas which is required to have a valve protection cap fitted in place may be transported on board a ferry vessel without having the valve protection cap in place when it is laden in a transport vehicle and is not removed from the vehicle while on the vessel.

§ 176.93 Vehicles having refrigerating or heating equipment.

(a) A transport vehicle fitted with refrigerating or heating equipment using a flammable liquid or gas, or diesel oil as fuel, may be transported on a ferry vessel. However, the refrigerating or heating equipment may not be operated while the vehicle is on the vessel, unless the equipment complies with the following requirements:

(1) The installation is rigidly mounted and free of any movement other than normal vibration in operation;

(2) An easily accessible shutoff control is fitted to the fuel and electrical supply of the refrigerating or heating equipment; and

(3) The fuel storage tank, the fuel lines, the carburetor and any other fuel devices are tight and show no signs of leakage.

(b) If the vehicle operator desires to operate the refrigerating or heating equipment while on the vessel and the equipment is not fitted with automatic starting and stopping devices, it must be started before the vehicle is taken on board. It may continue in operation while the vehicle is on the vessel, but if the motor stops it may not be restarted.

(c) In the case of a ferry vessel on a voyage exceeding 30 minutes' duration, stowage must be provided for transport vehicles having refrigerating or heating equipment operated by internal combustion engines which will permit ready diffusion of exhaust gases to the open air. Passenger vehicles may not be stowed in

a position adjacent to vehicles operating internal combustion motors which expose the occupants of the passenger vehicles to excessive concentrations of exhaust fumes from such motors.

(d) A transport vehicle containing solid carbon dioxide as a refrigerant may be transported on a ferry vessel only if it is stowed in a well ventilated location.

Subpart F—Special Requirements for Barges

§ 176.95 Application.

The requirements in this subpart are applicable to the transportation of hazardous materials on board barges and are in addition to any prescribed elsewhere in this subchapter.

§ 176.96 Barges classified.

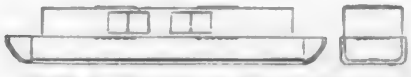
(a) For the purpose of this subpart, barges are classified as follows:

CLASS "A" BARGES

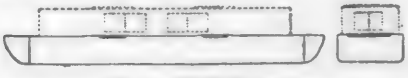
AA Hull—Constructed of steel or wood, completely decked over and transporting cargo "on deck" only.

AB Hull—Constructed of steel or wood, completely decked over, fitted with cargo hatches, ceiled holds, and capable of transporting cargo "under deck" or "on deck".

AC Hull—Constructed of steel or wood, completely decked over with superstructure house covering the deck and fitted with cargo hatches or cargo doors, and capable of transporting cargo "on deck", "under deck" in ceiled holds, or "on deck within the house".

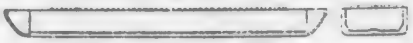


AD Hull—Constructed of steel or wood, completely decked over, fitted with cargo hatches, with or without superstructure house covering the deck, and capable of transporting cargo "on deck" or "on deck within the house", or "under deck", having holds that are not ceiled.

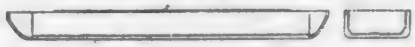


CLASS "B" BARGES

BA Hull—Constructed of steel or wood with partial decks at the ends or sides, fitted with hatches with or without coamings, having ceiled holds and transporting cargo "under deck" only.



BB Hull—Constructed of steel or wood with partial decks at the ends or sides with open ceiled hold or holds.



BC Hull—Constructed of steel or wood with partial decks at the ends or sides, with or without hatches, and having hold or holds without ceiling.

CLASS "C" BARGES

CA Hull—Constructed of steel or wood, completely decked over and transporting cargo "on deck" only, fitted with cargo mast and boom, and machinery for cargo handling, with or without house or houses on deck.

CB Hull—Constructed of steel or wood, completely decked over, having cargo hatches, and transporting cargo "on deck" or "under deck", fitted with cargo mast and boom and machinery for cargo handling, with or without house or houses on deck.

CLASS "D" BARGES

DA Hull—Constructed of steel having division bulkheads forming tight compartments (tanks) integral with the hull of the barge, to be utilized for the transportation of bulk liquid hazardous materials other than flammable or combustible liquids.

DB Hull—Constructed of wood having division bulkheads and ceiling, forming tight compartments integral with the hull of the barge, to be utilized for the transportation of bulk hazardous materials other than liquids.

CLASS "E" BARGES

EA Hull—Constructed of steel or wood, having cargo carrying compartments of hopper type and fitted with bottom dump or side dump (known as dump scows, mud scows, garbage scows, etc.).

EB Barge—Constructed of wood completely decked and having box-like structure on deck, not roofed over.

(b) The term "ceiled" applied to a barge constructed of wood means the hold space is fitted with a tight plank floor and that tight planking or wooden cargo battens are carried up the sides of the hold to provide a smooth floor and reasonably smooth sides without any unnecessary projections. Floors or siding fitted "tight" must have removable sections for cleaning and access for inspection of hull. When cargo battens are fitted at the sides, the floor must be carried out to the skin of the barge and fitted reasonably tight around the frames.

(c) The term "ceiled" applied to a barge constructed of steel means the construction must provide a reasonable flush floor or tank top and rise free from any unnecessary projections within the cargo space. Tight wooden flooring and ceiling or battens may be fitted in the cargo spaces of a steel barge in place of steel platings.

§ 176.98 Stowage of explosives.

Explosives required by this subchapter to be stowed in a magazine must, when on board a barge as cargo, be stowed either in a house or "under deck" when permitted for the particular type of barge by the table in § 176.99.

§ 176.99 Barges permitted to carry hazardous materials.

(a) The following table (Table III) specifies which classes of barges described in § 176.96 are authorized for the transportation of hazardous materials and prescribes certain conditions applicable thereto:

TABLE III

	Class "A" barge				Class "B" barge			Class "C" barge		Class "D" barge		Class "E" barge	
	AA	AE	AC	AD	BA	BB	BC	CA	CB	DA	DB	EA	EB
Explosives	Yes	Yes	Yes	On deck only	Yes	Yes	No	No	No	No	No	No	No
Flammable liquids	Yes[1]	Yes[2]	Yes	On deck only[1]	Yes	Yes[1]	No	Yes[1]	Yes[3]	No[8]	No	No	No
Flammable solids, oxidizers and organic peroxides	Yes[1,4]	Yes[2,5]	Yes	No	Yes	No	No	Yes[1]	Yes[3]	Yes	Yes	No	No
Corrosive materials	Yes, also bulk in tanks[9]	Yes, also bulk in tanks[9]	Yes, also bulk in tanks[9]	No, except bulk in tanks[9]	Yes, also bulk in tanks[9]	Yes, also bulk in tanks[9]	No, except bulk in tanks[9]	Yes[1]	Yes[3]	Yes	No	No	No
Flammable compressed gases	Yes	On deck only	Yes[7]	On deck only	No	No	No	Yes	On deck only	No	No	No	No
Nonflammable compressed gases	Yes	Yes	Yes	On deck only	Yes	Yes	No	Yes	Yes	No	No	No	No
Poison A, Poison B, and irritating materials	Yes[1]	Yes[2]	Yes	On deck only[1]	Yes	Yes[1]	No	Yes[1,4]	Yes[3,6]	No	No	No	No
Radioactive materials	Yes[1]	Yes[2]	Yes	On deck only[1]	Yes	Yes[1]	No	Yes[1,4]	Yes[3,6]	No	No	No	No
Other regulated materials	Yes[1,4]	Yes[2]	Yes	On deck only[1,4]	Yes	Yes[1,4]	No, except bulk in tanks[9]	Yes[1,4]	Yes[3,6]	Yes	Yes, except liquids	No	Yes

[1] Outside containers vulnerable to damage by water may not be given this stowage.

[2] Outside containers vulnerable to damage by water must be stowed under deck only.

[3] Outside containers vulnerable to damage by water must be stowed under cover only.

[4] Substances affected by water may not be given this stowage.

[5] Substances affected by water must be stowed under deck only.

[6] Substances affected by water must be stowed under cover only.

[7] Stowage must be "on deck in house" only.

[8] Transportation of flammable or combustible liquids, in bulk, is governed by rules and regulations for tank vessels.

[9] Transportation of certain hazardous materials in bulk is governed by the rules and regulations contained in Supchapter O of Chapter I of Title 46 Code of Federal Regulations.

Note: Any container of hazardous materials vulnerable to damage by water or hazardous materials affected by water, when loaded in a weatherproof railroad vehicle in accordance with requirements of this subchapter, is exempt from the stowage restrictions shown in this Table and numbered (1) to (7), inclusive.

Subpart G—Detailed Requirements for Explosives

§ 176.100 Permit for Class A explosives.

(a) Before a shipment of Class A explosives may be discharged from, loaded on, handled, or restowed on board a vessel at any place in the United States, its territories, or its possessions (except the Panama Canal Zone), the carrier must obtain a permit from the nearest District Commander. Exceptions to this permit requirement may be given only by the District Commander or his authorized representative.

§ 176.105 Loading and unloading explosives.

(a) In any particular port, Class A or Class B explosives (except special fireworks), may not be loaded on a vessel until all other cargo has been loaded on board the vessel. No explosives may be loaded or unloaded at the same time that other cargo is being handled.

(b) All explosives must be handled carefully. Packages of explosives may not be thrown, dropped, rolled, dragged, or slid over each other or over a deck.

(c) Packaged Class A explosives must be loaded and discharged from a vessel by using a chute as provided for in § 176.163 or by a mechanical pallet, skipboard, tray or pie plate, fitted with a cargo net or sideboards. A stuffed mattress at least 4 feet wide by 6 feet long and not less than 4 inches thick, or a heavy jute or hemp mat of these dimensions, must be used for depositing explosives lifted by mechanical means or slide on a chute. The maximum load handled in a pallet, shipboard, tray, or pie plate may not exceed 2,640 pounds. A rope net sling with a pallet, skidboard, pie plate or similar base must be loaded so that a minimum displacement of items occurs when it is lifted; the cargo net must completely encompass the cotton and sides of the load. Not more than one-third of the vertical dimension of any package may extend above the sideboard of a tray. A landing mattress and cargo net are not needed for palletized Class A explosives.

(d) Blasting caps, detonating fuzes, fulminate of mercury, and other initiating or priming explosives defined in this subchapter constitute a distinct type of explosive. They must be handled with extreme care. A chute and mattress may

not be used when loading or discharging this type of explosive.

(e) A "can" hook may not be used for raising or lowering a barrel, drum, or other container of explosives.

(f) A fire hose of sufficient length to cover the area of the loading operation and connected with an adequate water supply must be laid out and ready for use.

§ 176.110 Condition of package.

A package of an explosive which is damp, moldy, stained or in any condition that indicates leakage may not be transported by vessel. The shipper must substantiate any claim that a stain is due to accidental contact with grease, oil, or a similar substance. In case of doubt, the package may not be transported.

§ 176.115 On deck stowage of explosives.

(a) The following requirements apply to the stowage of explosives on deck:

(1) An explosive may not be stowed on or under a bridge deck.

(2) An explosive may not be stowed nearer than 25 feet in a horizontal plane to the crew's quarters.

(b) Explosives being transported on deck on a vessel between receiving points and delivery points within the same harbor, bay, sound, lake, or river including explosive anchorages must be covered with a fire resistant or flame-proof tarpaulin securely lashed in place.

§ 176.120 Preparation of decks, gangways, hatches, and cargo ports.

(a) All decks, gangways, and hatches over or through which explosives must be passed or handled in loading or unloading must be freed of all loose material and must be swept broom clean before loading and unloading.

(b) All hatches and cargo ports opening into a compartment in which any explosives are stowed must be kept closed, except during loading or unloading of the compartment. After loading, hatches must be securely closed against the weather. If tarpaulins are used, they must be securely battened.

§ 176.125 Handling over deck loads on break-bulk vessels.

A deck load over which explosives must be passed may not exceed the height of the hatch coaming, bulwark, or three feet, whichever is greater.

§ 176.130 Securing and dunnaging of packages of explosives.

(a) Each package of explosives must be secured and dunnaged to prevent movement in any direction. Vertical restraints are not required if the shape of the package and the stuffing pattern precludes shifting of the load.

(b) Each keg of black powder must be stowed in an upright position with the bungs up and each tier must be completely dunnaged.

(c) Each package of explosives must be braced and dunnaged so that it is not likely to be pierced by the dunnaging or crushed by any superimposed weight.

§ 176.135 Location of magazines.

(a) Each magazine must be located in a hold, preferably a 'tween deck hold, that is dry and well ventilated. It may not be located in horizontal proximity to crew or passenger accommodations or below their living spaces. A magazine may not be built on or under the principal bridge structure or any navigation spaces. Except for inspection purposes, the hold or compartment in which a magazine is constructed must be closed off to all traffic after the explosives are stowed.

(b) A magazine may not be constructed in contact with a collision bulkhead or a bulkhead forming a boiler room, engine room, coal bunker or galley boundary unless there is no practicable alternative. If it is necessary to construct a magazine contacting one of these bulkheads, a cofferdam space of at least one foot must be provided between the permanent bulkhead and the magazine bulkhead. The cofferdam space must remain open to the free circulation of air and may not be used for stowage or storage purposes.

(c) When a magazine is constructed over a 'tween deck hatch, the hatch girders or strongbacks and the hatch covers forming the 'tween deck hatch must be of a design and size to carry the imposed load with safety. Covers of the 'tween deck and over-deck hatch must completely close the hatch opening and fit securely in place. 'Tween deck hatch covers of wood forming the base of a magazine must be completely covered with asbestos board at least ¼-inch thick, fitted tight at the sides of the magazine. The joints of the asbestos board must be staggered midway between the joints formed by the wooden hatch covers and the magazine must be constructed in accordance with the applicable provisions of § 176.138, except that the asbestos board must be completely covered with wood dunnage. No metal structural parts may protrude within any magazine. If the stowage of explosives extends into the over-deck hatch coaming, this coaming must be sheathed with wood. A magazine located in a hatchway may be constructed to occupy only a part of the hatchway. A portable magazine may be stowed in the square of a hatchway; it must be lashed or tommed to prevent movement.

(d) Any construction and location of a magazine for the stowage of explosives other than as provided in the subpart may be authorized only by the Commandant, (GMHM).

§ 176.138 Construction of magazines.

(a) All magazine construction, and other conditioning of holds, deck, or hatches on a vessel, must be completed before the actual loading of explosives on that vessel is initiated.

(b) The following requirements must be observed in the construction of a magazine for stowage of explosives requiring magazine stowage:

(1) Each magazine must be constructed of steel or wood;

(2) Each magazine constructed of steel must have the interior completely protected by wood sheathing not less than ¾-inch thick to form a smooth surface free of any projections. All metal stanchions within the magazine must be boxed with wood not less than ¾-inch thick. When the floor of a magazine would be on a steel deck or tank top, a floor of wood not less than 1¼-inch commercial lumber, constructed on bearers, must be installed. This floor may be portable, but must be tight to prevent movement;

(3) Each magazine constructed of wood must have the bulkheads forming the sides and ends constructed of 1-inch lumber, ¾-inch tongue and groove sheathing, or ¾-inch plywood, secured to uprights of at least 3- by 4-inch size, spaced not more than 18 inches apart and secured at the top, bottom, and center with horizontal bracing. When ¾-inch plywood is used, the uprights may be spaced on 24-inch centers. Uprights may not be stepped directly to a metal deck. A 2- by 4-inch header must be fitted against the underside of the overhead deck to receive the top of the uprights. Top of uprights fitted against channel beams may be wedged directly to the beam with 2- by 4-inch spaces fitted between. Upright framing must be secured so that nails do not penetrate the interior of the magazine. When a magazine is constructed as a permanent compartment in a vessel, increased size and finish of lumber and other methods of fastening may be used, provided all fastenings are recessed below the surface of the boarding to avoid any projections within the interior of the magazine. All boarding must be fitted and finished to form a smooth surface within the interior of the magazine.

The construction must separate all containers of explosives from contact with metal surfaces of the structures of the vessel. When a metal stanchion, post, or other obstruction is located in the interior area of the magazine, this obstruction must be completely covered with wood at least ¾-inch thick secured with nails or screws. All screws or nails used in the interior of the magazine for fastening must be counter-sunk below the surface of the wood. Flooring of each magazine must be not less than 1¼-inch commercial lumber, constructed on bearers. This floor may be portable but must be tight to prevent movement. Each door of a magazine must be of substantial construction, fitted reasonably tight in its jamb, and provided with a locking method of a tamper-proof type. The door must be easily accessible;

(4) Plywood 5/16-inch thick may be used if the bulkheads forming the sides of a magazine are to be constructed directly against the ship's side and battens are fitted, and if the plywood is securely fastened to vertical furring strips of not less than 1- by 3-inch material, spaced not more than 18 inches apart;

(5) A magazine constructed in accordance with the provisions of paragraphs (b) (2) and (3) of this section, in which

it is proposed to stow containers of explosives within 12 inches of the overhead beams or hatch coaming must have such beams and coaming sheathed with wood as prescribed by the provisions of paragraph (b)(2) of this section for stanchions; and

(6) When a Class A explosive magazine exceeds 40 feet in any direction, a partition bulkhead must be fitted in the magazine as near half length as practicable, extending from the deck to at least the top of the stowage. This partition bulkhead must be constructed to the same scantlings as the sides of the magazine, except the boardings may be spaced not more than 6 inches apart alternately on both sides of the uprights. Nail points may not protrude beyond the surface of any boardings. The bulkhead must be constructed before loading commences. This bulkhead is not required when the explosives are palletized.

§ 176.141 Entire hold or compartment forming magazine.

When a complete hold or compartment is used for the stowage of explosives requiring magazine stowage, the entire hold or compartment may be considered a magazine. Any frames or bulkhead stiffeners protruding into the hold or compartment must be effectively sheathed to provide a smooth surface. Overhead beams need not be sheathed when the explosives are stowed more than 12 inches from these beams. If explosives are stowed up to the overhead beams and in the square of the hatch formed by the coaming, the overhead beams, including the hatch coaming, must be effectively sheathed. The installation of sheathing must be in accordance with the specifications for the construction of a magazine. However, when cargo battens are fitted to the vessel's shell or a bulkhead forming part of the hold or compartment, the sheathing may be secured vertically to the battens.

§ 176.114 Ventilation of magazines.

Each magazine must be effectively ventilated. Each cowl ventilator's weather deck opening must be covered with a 30x30 or finer mesh wire screen, if it leads into a magazine or to an area in the same hold adjacent to a magazine. A magazine which occupied only a portion of a hold, and is not fitted with a ventilator entering into the magazine, must be constructed to leave an open space of not more than one inch below the overhead frame.

§ 176.147 Metal lockers for stowage of fireworks.

Each metal locker for the stowage of special fireworks which are permitted to be transported on board passenger vessels must meet the following requirements:

(1) *Size.* The cubic capacity of the locker may not exceed 150 cubic feet.

(2) *Division.* If the locker is more than 5 feet in height, it must be fitted with a division shelf at about ½ height constructed to carry the imposed load without deflection.

(3) *Gauge.* The thickness of steel used in the construction of the locker may not be less than 16 gauge steel.

(4) *Type of construction.* The locker must have a completely smooth interior surface. No stiffener element may project beyond any interior surface. The locker must be fitted with a top and bottom closure unless it is "built-in" to the structure of the vessel with the overhead and deck forming the top and bottom of the locker. "Built-in" construction is not authorized if the overdeck or underdeck is wood.

(5) *Closures.* Closures may be the removable plate or hinged door type if the locker is flame tight when closed. A locker having a portable plate closure must have an accessible side opening to permit insertion of a fire hose nozzle for flooding. The opening must be at least 3 inches in diameter, not more than 12 inches below the top of the locker, and fitted with a metal flap cover to preserve the flame tight requirement.

(6) *Location.* The locker must be readily accessible from a companionway or cargo hatch. In vessels constructed of wood, the locker must be easily observable by a watchman on his rounds. The locker must be secured to prevent shifting in a seaway.

§ 176.150 Portable magazines for stowage of explosives.

(a) Each portable magazine used for the stowage of explosives on board a vessel must meet the following requirements:

(1) It must be watertight, constructed of wood or of metal lined with wood at least ¾-inch thick and with a capacity of no more than 110 cubic feet.

(2) All inner surfaces must be smooth and free of any protruding nails, screws, or other projections.

(3) If constructed of wood, the scantlings and arrangement must be not less than those required by § 176.138. It must be provided with a strong close-fitting, hinged cover or door with hasps and padlock.

(4) When constructed of metal, the metal must not be less than ⅛-inch thick.

(5) Runners, bearers, or skids must be provided to elevate the magazine at least 4 inches from the deck. Pad eyes, ring bolts, or other suitable means must be provided for securing. The magazine must be lashed, chocked, or braced to prevent movement in any direction.

(6) The magazine must be stowed in the square of a 'tween deck hatch unless another stowage is authorized by § 176.155.

(7) The magazine must be marked on the top and four sides, in letters at least 3 inches high, as follows:

"EXPLOSIVES—HANDLE CAREFULLY—KEEP LIGHTS AND FIRE AWAY".

(b) A portable magazine may be used for the stowage of explosives exceeding 110 cubic feet under such conditions of construction, handling, and stowage that meet the approval of the Commandant (GMHM).

§ 176.155 Stowage of small quantities of explosives.

(a) A District Commander may approve the stowage of small quantities of explosives in a location other than "under deck", such as in an isolated compartment, mast or deck house, or in a magazine (which may be portable) secured "on deck" if:

(1) No other stowage is available;

(2) The compartment or stowage area is sheathed with wood;

(3) The boundary of the compartment or magazine is at least 8 feet from the vessel's side; and

(4) The boundary of the explosives stowage area is separated from other incompatible explosives and other hazardous materials by at least one permanent steel deck or bulkhead and a distance of 25 feet or by at least two steel decks or bulkheads and a distance of 10 feet. An intervening steel deck or bulkhead is not required on deck if the separation distance between these materials is not less than 40 feet in any direction.

§ 176.156 Stowage of explosives with combustible liquids.

Class A or B explosives may not be stowed in the same hold or compartment with combustible liquids.

§ 176.157 Stowage of explosives in holds containing coal.

An explosive may not be stowed in a hold containing coal or in a hold above or adjacent to a hold containing coal.

§ 176.158 Stowage of explosives with fireworks.

Fireworks may not be stowed in the same hold in which there is a magazine containing explosives.

§ 176.159 Stowage of explosives and non-dangerous cargo.

Each magazine in which explosives are stowed must be protected from damage which may be caused by any heavy cargo stowed in the same hold. When any shafting, steel bar, pipe, heavy machinery, or similar type of cargo is stowed in the same hold with explosives, it must be isolated, dunnaged, or secured to prevent damage to the magazine under any conditions likely to be encountered during the voyage.

§ 176.163 Requirements of equipment for handling explosives.

(a) A chute for loading and unloading explosives must be constructed of smooth planed boards not less than one inch thick with side guards of the same material at least 4 inches high. Only brass screws may be used to assemble the sides and bottom. D-shaped wooden strips or runners not more than six inches apart and running the length of the chute must be fastened to the upper surface of the slide by glue and wooden dowels extended through the bottom of the chute. Four lashing rings must be provided, one at each outside corner of the chute, for purposes of securing during use.

(b) A roller conveyor constructed of aluminum or other non-sparking mate-

rial may be used for loading or unloading explosives. The conveyor must be grounded when in use.

(c) A powered conveyor may be used only after the design, construction, and specifications have been approved by the Commandant (GMHM).

(d) Before any explosives are loaded or unloaded from a vessel, the master of the vessel must examine the condition and working order of all slings, carts, baskets, boxes, chutes, mattresses, tackle and other equipment to be used in the transfer operation. This includes equipment belonging to the vessel, stevedores, and any contractors.

(e) Any equipment which in the judgment of the master of the vessel is not in a safe working condition must be rejected. He shall prohibit its use and take the precautions necessary to ensure that the rejected equipment is not used to load or unload explosives. The master of the vessel shall ensure that all equipment used in the handling of explosives is in good working order. If any part of the equipment shows any defect or is damaged in use, work must be stopped immediately and the damaged or defective equipment repaired or replaced before permitting the loading or unloading to continue.

§ 176.165 Installation of loading chute and roller conveyor.

A chute or roller conveyer to be used in loading or unloading explosives may not be positioned or inclined in a manner which will permit any sliding package to violently strike any other package on or at the bottom of the chute or conveyer. Personnel may be stationed alongside the chute or conveyer to control the velocity of the packages to prevent any violent shock. Each chute must be wiped with machine oil before any package of explosives is transferred.

§ 176.167 Lights, tools, and equipment.

(a) No artificial light except electric lights or electric lamps or floodlights may be used on board a vessel during the loading or unloading of explosives.

(b) The carrier shall provide flashlights of a non-sparking type for persons required to enter holds in which explosives are stowed.

(c) No person on board a vessel loading, unloading or transporting explosives may carry firearms, matches, bale hooks, or metallic tools of other than the non-sparking type on board.

(d) No person engaged in loading or unloading Class A or Class B explosives may wear boots or shoes shod or strengthened with iron nails or other metal, unless the boots or shoes are covered with rubber, leather, felt or other non-sparking material.

§ 176.169 Fires.

(a) No fire is permitted on any dock, lighter, or vessel involved in the loading or unloading of explosives during the loading or unloading unless the fire is necessary.

(b) If a fire is necessary it must be properly safeguarded and under the direct observation of a competent person assigned for that purpose by the master of the vessel for the entire period of cargo transfer.

§ 176.171 Smoking.

(a) Smoking is prohibited on and near any vessel loading or unloading explosives at a waterfront facility. The Coast Guard officer having jurisdiction may designate smoking areas at a safe distance from the vessel. "NO SMOKING" signs must be posted during operations of handling, loading, or unloading the cargo. At least one "NO SMOKING" sign must be conspicuously posted on the pier at a reasonable distance from the vessel during the handling, loading or unloading of explosives.

(b) Smoking is prohibited on and near any vessel handling, loading or unloading explosives at an explosives anchorage. However, the Coast Guard officer having jurisdiction may, with the concurrence of the master or person in charge of the vessel, designate a compartment as a smoking area. "NO SMOKING" signs must be posted conspicuously outside the entrance to this compartment and in other parts of the vessel during the loading or unloading operations.

§ 176.173 Liquor or drugs.

A person who the master of a vessel finds, in his judgment, to be under the influence of liquor or drugs, may not be permitted on board during the loading, unloading, or transporting of explosives.

§ 176.177 Magazine vessels.

(a) *General.* The requirements of this section are applicable to magazine vessels and are in addition to any prescribed elsewhere in this subchapter.

(b) *Type vessel authorized.* A single deck vessel with or without a house on deck is the only type vessel that may be used as a magazine vessel. A magazine vessel may not be moved while explosives are on board.

(c) *Location of explosives.* Class A and Class B explosives in excess of 5,000 pounds stored in any magazine vessel must be stowed below deck. No explosive may be stowed on deck unless the vessel is fitted with a deck house having a stowage area which meets the requirements in this subpart for the stowage of explosives. Quantities of blasting caps in excess of 1,000 may not be stored on the same magazine vessel with Class A or Class B explosives.

(d) *Explosives storage spaces.* Any compartment on a magazine vessel used for the stowage of explosives must be completely ceiled with wood so as to provide a smooth interior surface. Each metal stanchion in the compartment must be boxed in the same manner. An overhead ceiling is not required when the overdeck is weathertight. All nail and bolt heads must be countersunk and any exposed metal must be covered with wood.

(e) *Primers and blasting caps.* No initiating or priming explosive may be stowed in the same compartment with any other explosive when there is any high explosive on the same magazine vessel. Blasting caps must be stowed at least 25 feet from any bulkhead forming a boundary of a compartment containing any other explosives.

(f) *Dry storage spaces.* A magazine vessel having a dry storage space capable of being used for any purpose whatsoever must have a cofferdam at least 24 inches wide fitted between the dry storage space and each adjacent compartment containing explosives. The cofferdam must be constructed of wood or steel, formed by two tight athwartship bulkheads extending from the skin of the vessel to the overdeck. If the cofferdam extends to the weather deck, a watertight hatch must be fitted in the deck to provide access to the cofferdam.

(g) *Lighting.* Non-sparking, battery-powered, self-contained electric lanterns or non-sparking hand flashlights are the only means of artificial light authorized.

(h) *Living quarters.* Living quarters must be fitted on the inside with asbestos board or other equivalent fire resistant material. Bracketed ship's lamps are the only lighting fixtures authorized to be used in the living quarters. Any stove used for heating or cooking must be securely fastened and may not be mounted closer than 6 inches to the deck or sides of the house. Any smoke pipe for the stove which passes through the roof of the house must be kept at least 3 inches away from any woodwork. Each smoke pipe must be protected by a layer of asbestos, an air space of at least 1 inch, and a metal collar of at least 16 gauge sheet secured only on the weather side of the roof. There may be no opening from any living quarters into any stowage compartment.

(i) *Storage of other hazardous materials.* Magazine vessels having explosives on board may not be used for the storage of any other hazardous material.

(j) *Magazine vessel's stores.* Articles for use as stores on board any magazine vessel must be in compliance with the requirements of 46 CFR Part 147.

(k) *Matches.* Safety matches requiring a prepared surface for ignition are the only type of matches authorized for use on board a magazine vessel. They must be kept in a metal box or can with a metal cover and stored in the custodian's living quarters.

(l) *Firearms.* Firearms and ammunition (other than cargo) are not permitted on board a magazine vessel.

(m) *Fire extinguishing equipment.* No explosive may be received, stored, or dispensed from any magazine vessel, unless four 2½-gallon extinguishers of the soda-acid type and four 2-gallon pails filled with dry sand are placed about the vessel. The contents of each liquid extinguisher continuously exposed to a temperature lower than 40 degrees F. (45 degrees C.) must be modified or otherwise protected to prevent freezing.

(n) *Supervision.* A magazine vessel containing explosives must be continuously attended by a custodian employed for that purpose by the vessel's owner.

(o) *Unauthorized persons on magazine vessels.* The custodian of a magazine vessel shall prevent unauthorized persons from coming on board unless it

is necessary to abate a hazard to human life or a substantial hazard to property.

(p) *Repacking of explosives on board.* No explosive may be repacked on board a magazine vessel. Any broken or damaged package must be placed in an open box and carried to a safe location for repacking or other disposition.

(q) *Work boat.* Each magazine vessel must be equipped with a work boat.

(r) *Life preservers.* One approved personal flotation device must be available for each person employed on a magazine vessel.

(s) *Fenders.* Each magazine vessel must be fitted with fenders in sufficient number and size to prevent any vessel tieing up alongside from coming in contact with the hull.

Subpart H—Detailed Requirements for Compressed Gases

§ 176.200 General stowage requirements.

(a) Each package of compressed gas being transported by vessel must be prevented from making direct contact with the vessel's deck, side or bulwark by dunnage, shoring, or other effective means.

(b) When cylinders of compressed gas being transported by vessel are stowed horizontal, each tier must be stowed in the cantilines of the lower tier and the valves on cylinders in adjacent tiers must be at alternate ends of the stow. Each tier may be stepped back and the ends alternated in order to clear the flange. Lashing must be provided to prevent any movement.

(c) When cylinders of compressed gas being transported by vessel are stowed in a vertical position they must be stowed upright in a block and cribbed or boxed in with suitable sound lumber. The box or crib must be dunnaged at least 4 inches off any metal deck. The cylinders in the box or crib must be braced to prevent any movement. The box or crib must be securely chocked and lashed to prevent any movement.

(d) A compressed gas packaging, bearing a Poison label, must be stowed away from all foodstuffs.

(e) Compressed gas may not be stowed "on deck" over a hold or compartment containing coal.

§ 176.205 Under deck stowage requirements.

(a) When compressed gas is stowed below deck, it must be stowed in a ventilated hold or compartment with no source of artificial heat and clear of crew and passenger living spaces. No bulkhead or deck of the hold or compartment may be a common boundary with any boiler room, engine room, coal bunker, galley or boiler room uptake.

(b) When flammable compressed gas is stowed below deck, it must be stowed in a hold or compartment which complies with paragraph (a) of this section and the following requirements:

(1) Each hold or compartment must be equipped with an overhead water sprinkler system or fixed fire smothering system.

(2) Each electrical power line in the hold or compartment must be protected by a strong metal covering to prevent crushing by cargo being stowed against it.

(3) Except when fitted with electrical fixtures of the explosion-proof type, each electrical circuit serving the hold or compartment must be disconnected from all sources of power. No circuit may be energized until the flammable compressed gas cargo and any vapors have been removed from the hold or compartment. Portable lighting of the explosion-proof type may be used if the source of power is from electrical outlets outside the hold or compartment and above the weather deck.

(4) Any opening in a common bulkhead of an adjacent hold or compartment must be securely closed off and made gas tight, unless the adjacent hold or compartment is also used for the stowage of flammable compressed gas.

(5) Full and efficient hatch covers must be used. Tarpaulins, if fitted, must be protected by dunnaging before overstowing with any cargo. Each tarpaulin must be in one piece and free of rents, tears, and holes.

(6) A fire screen must be fitted at the weather end of each vent duct leading from the hold or compartment. The fire screen must completely cover the open area. It must consist of two layers of fine brass wire screen at least 20x20 mesh or finer, spaced not less than ½ inch or more than 1½ inches apart. The screen may be removable if means for securing it in place when in service are provided.

(7) The hold or compartment may not be fitted with any gooseneck type vent trunk head.

(8) All electrical apparatus located in the hold or compartment must have a positive means for disconnecting from power outside the hold or compartment containing any flammable compressed gas.

§ 176.210 On deck stowage requirements.

Cylinders of compressed gas being transported by vessel must be protected from the direct rays of the sun by structural erections or awnings. A tarpaulin covering the cylinders is not acceptable if it comes in contact with them.

§ 176.220 Smoking or open flame and posting of warning signs.

(a) Smoking or the use of open flame is prohibited in any hold or compartment containing a flammable compressed gas, near any flammable compressed gas stowed on deck, or near any ventilator leading to a hold containing this material.

(b) A sign carrying the legend:

FLAMMABLE VAPORS
KEEP LIGHTS AND FIRE AWAY
NO SMOKING

must be conspicuously posted at each approach to an "on deck" flammable compressed gas stowage area and near each cargo hold ventilator leading to a hold containing this material. The sign must be painted on a white background using red letters. The letters may not be less than 3 inches high.

§ 176.225 Stowage of chlorine.

Chlorine may not be stowed in the same hold or compartment with metallic sodium or potassium, phosphorus, copper or brass leaf sheets, powdered antimony, turpentine, ammonia, finely divided organic material, coal gas, hydrogen, or acetylene.

Subpart I—Detailed Requirements for Flammable Liquids and Combustible Liquids

§ 176.305 General stowage requirements.

(a) Except as otherwise provided in § 176.76(g), a package containing a flammable liquid and equipped with a vent or safety relief device must be stowed "on deck" only.

(b) The following requirements apply to each hold or compartment in which a flammable or cumbustible liquid is being transported:

(1) The hold or compartment must be ventilated;

(2) Stowage of these liquids within 20 feet of a bulkhead which forms a boundary or deck of a boiler room, engine room, coal bunker, galley, or boiler room uptake is not permitted. If the amount of the liquid to be stowed in a hold will not permit compliance with the requirement for a 20-foot separation, less separation distance is authorized if at least one of the following conditions exists:

(i) The bulkhead or deck is covered with at least 3 inches of insulation or the entire area subject to heat;

(ii) A temporary wooden bulkhead at least 2 inches thick is constructed in the hold at least 3 inches off an engine room or 6 inches off a boiler room bulkhead, covering the entire area of the bulkhead that is subject to heat and the space between the permanent bulkhead and the temporary wooden bulkhead is filled with bulk asbestos or mineral wool; or

(iii) A temporary wooden bulkhead is constructed of at least one inch thick tongue and groove sheathing, located 3 feet from the boiler room or engine room bulkhead, and filled with sand to a height of 6 feet above the tank top, or, if the cargo compartment is located between decks, 3 feet of sand.

(3) Combustible liquids may be stowed in a hold within 20 feet of a common bulkhead with the engine room if the means of vessel propulsion is internal combustion engines; and

(4) Each cargo opening in a bulkhead of an adjacent hold must be securely closed off and made gas tight, unless the adjacent hold is also used for the stowage of a flammable or combustible liquid.

(c) In addition to the requirements specified in paragraph (b) of this section, the following requirements apply to each

hold or compartment in which a flammable liquid is transported:

(1) Full and effective hatch covers must be used. Tarpaulins, if fitted, must be protected by dunnaging before overstowing with any cargo. Each tarpaulin must be in one piece and free of rents, tears, and holes;

(2) If flammable liquids in excess of one ton are stowed under deck in any one hold or compartment, a fire screen must be fitted at the weather end of each vent duct leading from that hold or compartment. The fire screen must completely cover the open area. It must consist of two layers of fine brass wire screen at least 20 x 20 mesh or finer spaced not less than ½ inch or more than 1½ inches apart. The screen may be removable if means for securing it in place when in service are provided;

(3) Each electrical power line in the hold or compartment must be protected by a strong metal covering to prevent crushing by cargo being stowed against it;

(4) Except when fitted with electrical fixtures of the explosion-proof type, each electrical circuit serving the hold or compartment must be disconnected from all sources of power from a point outside the hold or compartment containing the flammable liquid. No circuit may be energized until the flammable liquids and any vapors have been removed from the hold or compartment. Portable lighting of the explosion-proof type may be used if the source of power is from electrical outlets outside the hold or compartment and above the weather deck;

(5) Flammable liquids in excess of one ton may not be transported in any hold or compartment, that is fitted with a gooseneck type of vent head.

(d) On a passenger vessel, each hold or compartment used to transport flammable liquids must be equipped with an overhead water sprinkler system or fixed fire smothering system.

(e) On a passenger vessel, each hold or compartment used to transport a flammable liquid under a passenger space must have an overdeck of an A–60 type construction (see 46 CFR 72.05–10(c)(1)) or equivalent or have its underside covered with at least 3 inches of noncombustible insulation.

(f) No flammable liquid in a drum or wooden case, having inside packagings of more than one quart capacity each, may be stowed as a beam filler. A wooden barrel, a wooden box or a fiberboard box, with any flammable liquid in inside packagings of not more than one quart capacity each, may not be stowed as a beam filler unless it is possible to stow and observe any "THIS SIDE UP" marking.

§ 176.315 Fire protection requirements.

(a) For each 21,000 U.S. gallons (or part thereof) of any flammable or combustible liquid being transported on board a vessel in a portable tank, tank car, or a tank truck, there must be provided at least one B–V semiportable foam (40 gallon capacity) (see 46 CFR 95.50), dry chemical (100 lbs. minimum capacity) or equivalent fire extinguisher, or a fire hose fitted with an approved portable mechanical foam nozzle with pick-up tube and two 5 gallon cans of foam liquid concentrate. Each foam system must be suitable for use with each flammable or combustible liquid it is intended to cover. Each fire extinguisher must be accessible to the tank it is intended to cover.

(b) The fire hose at each fire hydrant in the vicinity of flammable or combustible liquid stowage areas must be fitted with an approved combination spray nozzle.

(c) The pressure must be maintained in the vessel's fire mains during the loading and unloading of the flammable or combustible liquid.

(d) Two 15-pound capacity hand portable dry chemical or two portable 2½-gallon form-type extinguishers must be accessible to any packaged flammable or combustible liquid and suitable for use with the lading.

§ 176.320 Use of hand flashlights.

Each hand flashlight used in a hold or compartment containing any flammable liquid, or on deck near any flammable liquid, must be of the non-sparking type.

§ 176.325 Smoking or open flame and posting of warning signs.

(a) Smoking or the use of open flame is prohibited in any hold or compartment containing a flammable or combustible liquid, near any flammable or combustible liquid stowed on deck, or near any ventilator leading to a hold containing such material.

(b) A sign carrying the legend:

FLAMMABLE VAPORS
KEEP LIGHTS AND FIRE AWAY
NO SMOKING

must be conspicuously posted at each approach to a flammable or combustible liquid stowed "on deck" and near each cargo-hold ventilator leading to a hold or compartment containing this material. This sign must be painted on a white background using red letters. The letters may not be less than 3 inches high.

§ 176.328 Motor vehicles or mechanical equipment powered by internal combustion engines.

(a) A motor vehicle or any mechanized equipment powered by an internal combustion engine is subject to the requirements of this subchapter when carried as cargo on a vessel if the engine or fuel tank contains any fuel or if either battery cable is connected. The requirements of this subchapter do not apply if the fuel tank is empty, the engine has been run until it has stalled from lack of fuel, both battery cables are disconnected, and no hazardous material is stowed in the vehicle.

(b) Before being loaded on a vessel, each vehicle must be inspected for leaks. A vehicle showing any signs of leakage may not be transported.

(c) Each vehicle stowed in a hold or compartment must have the battery cables disconnected and secured away from the battery terminals, unless it is stowed in a hold or compartment designated by the administration of the country in which the vessel is registered to be specially suited for vehicles. (See 49 CFR 95.15–5 (e) and (f) for U.S. vessels).

(d) The fuel tank of a vehicle being transported as cargo on a vessel may not be more than one-fourth full.

(e) All equipment used for handling vehicles must be designed so that the fuel tank and fuel system are protected from stress that might cause rupture or other damage incident to handling.

(f) Whenever possible each vehicle must be stowed to allow for its inspection during transit.

(g) Two hand-held, portable, dry chemical fire extinguishers of at least 10 pounds capacity each must be separately located in an accessible location in each hold or compartment in which any motor vehicle is stowed.

(h) "NO SMOKING" signs must be conspicuously posted at each access opening to the hold or compartment.

(i) The following additional requirements apply to the stowage of any vehicles containing a flammable compressed gas or flammable liquid:

(1) Each portable electrical light and hand flashlight used in the stowage area must be an approved, explosion-proof type. All electrical connections for any portable light must be made to outlets outside the space in which any vehicle is stowed;

(2) No hazardous material other than motor vehicles or mechanized equipment may be stowed in the same hold or compartment with any vehicle having a flammable liquid or flammable compressed gas in its fuel tank;

(3) Each hold or compartment must be ventilated and fitted with an overhead water sprinkler system or fixed fire extinguishing system;

(4) Each hold or compartment must be equipped with a smoke or fire detection system; and

(5) All electrical equipment in the hold or compartment other than fixed explosion-proof lighting must be disconnected from its power source at a location outside the hold or compartment during the handling and transportation of any vehicle. Where the disconnecting means is a switch or circuit breaker, it must be locked in the open position until all vehicles have been discharged.

(j) Motor vehicles may be refueled when necessary in the hold of a vessel in accordance with § 176.78.

(k) Motor vehicles with fuel in their tanks may not be stowed in closed (nonventilated) containers.

§ 176.331 Transportation of flammable liquids with foodstuffs.

Each package containing a flammable liquid which bears a Poison label must be stowed separate from foodstuffs.

Subpart J—Detailed Requirements for Flammable Solids, Oxidizers and Organic Peroxides

§ 176.400 Stowage of oxidizers and organic peroxides.

(a) No oxidizer or organic peroxide being transported by vessel may be stowed in the same hold or compartment with any readily combustible material such as a combustible liquid, a textile product, or with a finely divided substance such as an organic powder.

(b) No oxidizer or organic peroxide being transported by vessel may be stowed in a hold or compartment containing sulfur in bulk, or in any hold or compartment above, below, or adjacent to one containing sulfur in bulk.

§ 176.405 Stowage of charcoal.

(a) Before stowing charcoal on a vessel for transportation, the hold or compartment in which it is to be stowed must be swept broom clean. All residue of former cargo, including a petroleum product, a vegetable or animal oil, nitrate, or sulfur, must be removed.

(b) Charcoal packed in bags and offered for transportation on board a vessel in a quantity over one ton must be loaded so that the bags are laid horizontally and stacked with space for efficient air circulation. If the bags are not compactly filled and closed to avoid free space within, vertical and horizontal dunnage strips must be laid between the bags. Space for ventilating must be maintained near bulkheads, the shell of the vessel, the deck and the overhead. No more than 40 tons of charcoal may be stowed in a hold or compartment when other stowage space is available. If the unavailability of hold or compartment space requires the stowage of a larger amount, the arrangement of the stow for ventilation must be adjusted to ensure a sufficient venting effect.

(c) Any loose material from bags broken during loading must be removed. Broken bags may be repacked or have the closures repaired and the repaired bags restowed.

(d) Charcoal "screenings" packed in bags must be stowed to provide spaces for air circulation between tiers regardless of the quantity stowed.

§ 176.410 Nitro carbo nitrate and ammonium nitrates.

(a) This section prescribes requirements to be observed with respect to transportation of each of the following hazardous materials by vessel:

(1) Nitro carbo nitrate.

(2) Ammonium nitrate (no organic coating), containing 90 percent or more ammonium nitrate.

(3) Ammonium nitrate (organic coating), containing 90 percent or more ammonium nitrate, 3–4 percent clay and 1 percent or less organic material.

(4) Ammonium nitrate-carbonate mixture, containing 40 percent or more fine calcium carbonate or dolomite.

(5) Ammonium nitrate fertilizer (*containing no more than 0.2 percent carbon*).

(6) Non-acidic ammonium nitrate mixed fertilizer, containing less than 5 percent organic material and 60 percent or less ammonium nitrate.

(7) Ammonium nitrate-phosphate, containing 40 percent or more dicalcium phosphate.

(b) This section does not apply to any non-acidic ammonium nitrate mixed fertilizer containing 13 percent or less ammonium nitrate, less than 5 percent organic material, no other oxidizing material, and which does not meet the criteria for any other hazard class set forth in Part 173 of this subchapter.

(c) When nitro carbo nitrate or any of the ammonium nitrates listed in paragraph (a) of this section is transported by vessel:

(1) It must be stowed well away from any steam pipe, electric circuit, or other source of heat;

(2) Smoking may not be permitted except in designated areas away from the material and "No-Smoking" signs must be posted in accordance with § 176.60;

(3) Fire hoses must be connected, laid out, and tested before loading or unloading commences; and

(4) A fire watch must be posted in the hold or compartment where the material is being loaded or unloaded.

(d) When nitro carbo nitrate or any of the ammonium nitrates listed in paragraph (a) of this section are transported in bags by vessel:

(1) The requirements specified in paragraph (c) of this section must be complied with;

(2) The temperature of the bagged material may not exceed 130 degrees F.;

(3) Minimum dunnage and sweatboards must be used to prevent any friction or abrasion of bags, and to allow for the circulation of air and access of water in the event of fire;

(4) The bags must be stowed from side to side, out to the sweatboards;

(5) A space of 18 inches must be provided between any transverse bulkhead and the bags;

(6) The bags must be stowed so as to provide an 18-inch athwartship trench along the centerline of the compartment, continuous from bottom to top;

(7) The bags must be stowed so as to provide an 18-inch amidship trench running fore and aft from bulkhead to bulkhead;

(8) The bags may not be stowed closer than 18 inches from any overhead deck beam;

(9) The bags must be stowed so as to provide vent flues 14 inches square at each corner of the hatch continuous from top to bottom;

(10) Trenching must be accomplished by alternating the direction of the bags in each tier (bulkheading); and

(11) The bags must be blocked and braced as necessary to prevent shifting of the bagged cargo adjacent to any trench area.

(e) Nitro carbo nitrate or any of the ammonium nitrates listed in paragraph (a) of this section may be transported by vessel with dynamite, commercial boosters, or other non-priming, non-initiating types of explosives which are compatible with dynamite:

(1) In the same hold or compartment with the explosives or in a hold or compartment adjacent to the explosives if the nitro carbo nitrate or ammonium nitrate is packaged in strong metal cans, metal or fiber drums, barrels, kegs, or wooden or fiberboard boxes with non-combustible inside packagings; or

(2) In proximity to the explosives if the two are separated by a steel deck or bulkhead, or a fire retardant wooden bulkhead built to the specifications of § 176.138(b)(3). The deck or bulkhead must be sheathed on the oxidizing materials stowage side with one-inch asbestos board.

(f) An ammonium nitrate mixture containing any ingredient which would accelerate the decomposition of ammonium nitrate under conditions incident to transportation may not be transported by vessel.

§ 176.415 Permit requirements for nitro carbo nitrate and certain ammonium nitrates.

(a) Except as provided in paragraph (b) of this section, before any of the following material is loaded on or unloaded from a vessel at any waterfront facility in the United States, its territories, or its possessions (except Panama Canal Zone), the carrier concerned must obtain written permission from the nearest District Commander, U.S. Coast Guard:

(1) Ammonium nitrate (organic coating), limited to 90% or more ammonium nitrate, with 3–4 percent clay, and 1 percent or less organic material in any package.

(2) Ammonium nitrate mixtures containing more than 60 percent ammonium nitrate, ammonium nitrate-phosphate, or nitro carbo nitrate, packaged in a paper bag, burlap bag, or other non-rigid combustible packaging, or any rigid container with combustible inside packagings.

(3) Any other ammonium nitrate or ammonium nitrate mixture not listed in § 176.410 (a) or (b).

(b) Any of the following may be loaded on or unloaded from a vessel at any waterfront facility without a permit:

(1) Ammonium nitrate (no organic coating) in a rigid container with non-combustible inside packaging.

(2) Ammonium nitrate fertilizer in a rigid container with non-combustible inside packaging.

(3) Ammonium nitrate-phosphate in a rigid container with non-combustible inside packaging.

(4) Ammonium nitrate-carbonate.

(5) Ammonium nitrate mixed fertilizer.

(c) Before a permit may be issued the following requirements must be met in addition to any others the District Commander may require:

(1) If the material is ammonium nitrate (organic coating), ammonium nitrate-phosphate, or nitro carbo nitrate in non-rigid combustible packaging or

in a rigid container with combustible inside packaging, it must be loaded or unloaded at a facility remote from populous areas or high value or high hazard industrial facilities so that in the event of fire or explosion loss of lives and property may be minimized;

(2) If the material is ammonium nitrate (organic coated) in rigid metal drums with non-combustible inside packagings, nitro carbo nitrate in rigid containers with non-combustible inside packagings, an ammonium nitrate mixture containing more than 60% ammonium nitrate, or ammonium nitrate-phosphate, in rigid containers with combustible inside packagings, it must be loaded or unloaded at a facility removed from congested areas or high value or high hazard industrial facilities;

(3) Each facility at which the material is to be loaded or unloaded must conform with the requirements of the port security and local regulations and must have an abundance of water readily available for fire fighting; and

(4) Each facility at which the material is to be loaded or unloaded must be located so that each vessel to be loaded or unloaded has an unrestricted passage to open water. Each vessel must be moored bow to seaward, and must be maintained in a mobile status by the presence of tugs or the readiness of engines. Each vessel must have two wire towing hawsers, each having an eye spice, lowered to the water's edge, one at the bow and the other at the stern.

§ 176.419 Flammable solids or oxidizers transported with foodstuffs.

Each package containing a flammable solid or an oxidizer, bearing a Poison label and being transported on a vessel must be stowed separate from foodstuffs.

Subpart K—[Reserved]

Subpart L—Detailed Requirements for Poison A, Poison B, and Irritating Materials

§ 176.600 General stowage requirements.

Each package bearing a Poison label and being transported on a vessel must be stowed well away from living quarters and any ventilation ducts serving living quarters and separate from foodstuffs.

§ 176.605 Care following leakage or sifting of poisons A or B.

A hold or compartment containing a package of poison A or B which has leaked or sifted must be thoroughly cleaned and decontaminated after the cargo is unloaded and before the hold or compartment is used for the stowage of any other cargo.

Subpart M—Detailed Requirements for Radioactive Materials

§ 176.700 General stowage requirements.

(a) Each package or container bearing "RADIOACTIVE WHITE" or "RADIOACTIVE YELLOW" labels and being transported on a vessel must be stowed separately from any living accommodations and from any space continuously occupied by any person. Separate stowage is not required from a space occupied by a courier especially authorized to accompany a shipment.

(b) Mail bags may not be stowed in the same hold with radioactive materials.

(c) A package of radioactive materials which is a significant heat source may not be overstowed with any other cargo. If the package is stowed under deck, the hold or compartment in which it is stowed must be ventilated.

(d) Each Fissile Class III shipment must be stowed in a separate hold or compartment and be stowed and handled at least 20 feet from all other packages bearing "RADIOACTIVE YELLOW" labels.

(e) A person may not remain unnecessarily in a hold or compartment or in the immediate vicinity of any package on deck containing radioactive materials. A person may not be exposed to a total of more than 100 millirem in any 7-day period or more than 500 millirem per year whole body dose.

(f) The radiation level in any space or area continuously occupied by passengers, crew, or shipments of animals may not exceed 0.5 millirem per hour.

(g) In the case of a shipment or radioactive materials requiring supplemental operational procedures, the shipper shall furnish the master or person in charge of the vessel a copy of the necessary operational instructions.

(h) The following requirements apply to the stowage of packages of radioactive materials on board a vessel with regard to transport index numbers which are shown on the labels of individual packages:

(1) The sum of the transport indexes of any group of packages may not exceed 50. Each group of packages must be separated by at least 20 feet from all other packages bearing "RADIOACTIVE YELLOW" labels. This separation requirement does not apply to low specific activity or a full load if the consignor has the exclusive use of the entire vessel and the sum of the transport indexes of any group of Fissile Class II packages does not exceed 50.

(2) The sum of the transport indexes of all packages of radioactive materials on board a vessel may not exceed 200.

(3) Packages bearing "RADIOACTIVE YELLOW" labels may not be stowed any closer to persons or undeveloped film than the distances specified in the following table:

Sum of transport indexes of the packages	Minimum distance in feet from living accommodation or regularly occupied working space				Minimum distance[1] in feet from undeveloped films or plates									
					Less than 24-hour voyage	24 up to 48-hour voyage	Over 2 up to 4-day voyage				Over 4 up to 9-day voyage			
	A	B	C	D	A	A	A	B	C	D	A	B	C	D
0 through 0.5	10	10	10	10	3	5	10	10	10	10	15	10	10	10
Over 0.5 through 1.0	10	10	10	10	5	7	15	10	10	10	20	10	10	10
Over 1.0 through 2.0	10	10	10	10	7	12	20	10	10	10	25	15	10	10
Over 2.0 through 5.0	10	10	10	10	12	16	35	10	10	10	40	15	10	10
Over 5.0 through 10.0	15	10	10	10	16	25	40	15	10	10	55	20	10	10
Over 10.0 through 25.0	25	10	10	10	25	35	65	20	10	10	100	30	10	10
Over 25.0 through 50.0	40	15	10	10	35	50	90	30	10	10	145	45	10	10
Over 50.0 through 100	60	20	10	10	50	70	140	45	10	10	210	65	10	10
Over 100 through 200	80	25	10	10	70	100	190	55	10	10	285	85	15	10
Over 200 through 300[2]	110	30	10	10	90	125	230	70	10	10	320	105	15	10
Over 300 through 400[2]	130	35	10	10	100	145	260	80	15	10	360	120	20	10

Sum of transport indexes of the packages	Minimum distance[1] in feet from undeveloped films or plates—Con.													
	Over 9 up to 16-day voyage				Over 16 up to 25-day voyage				Over 25 up to 36-day voyage				Over 36 up to 49-day voyage			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
0 through 0.5	20	10	10	10	20	10	10	10	25	15	10	10	30	15	10	10
Over 0.5 through 1.0	25	15	10	10	30	15	10	10	35	20	10	10	45	20	10	10
Over 1.0 through 2.0	35	15	10	10	45	20	10	10	55	25	10	10	65	30	10	10
Over 2.0 through 5.0	60	20	10	10	70	25	10	10	90	30	10	10	100	35	10	10
Over 5.0 through 10.0	85	30	10	10	110	35	10	10	135	40	10	10	155	45	10	10
Over 10.0 through 25.0	140	45	10	10	170	50	10	10	200	60	10	10	230	70	10	10
Over 25.0 through 50.0	195	60	10	10	240	70	10	10	275	85	15	10	315	105	15	10
Over 50.0 through 100	270	85	15	10	320	95	15	10	360	115	20	10	400	145	20	10
Over 100 through 200	325	110	20	10	400	145	20	10	450	180	25	10	520	170	30	10
Over 200 through 300[2]	400	145	25	10	460	175	25	10	560	220	30	10	(3)	240	35	10
Over 300 through 400[2]	450	165	30	10	500	200	30	10	(3)	235	35	10	(3)	270	40	10

[1]Column A applies when no intervening cargo or bulkheads screen the radioactive material from the living accommodation or undeveloped photographic film or plate. Column B applies when the radioactive material is to be surrounded by at least 2 feet of cargo of unit density and at least 1 steel bulkhead between the radioactive material and the living accommodation or undeveloped photographic film or plate. Column C applies when the radioactive material is to be surrounded by at least 6 feet of cargo of unit density and at least 2 steel bulkheads between the radioactive material and the living accommodation or undeveloped photographic film or plate. Column D applies when the radioactive material is to be surrounded by at least 14 feet of cargo of unit density and at least 2 steel bulkheads between the radioactive material and the living accommodation or undeveloped photographic film or plate.

"Cargo of unit density" means cargo stowed at a density of 1 ton per 36 cubic feet (1 ton metric per cubic meter). Where the density of the cargo is less than this, the depth of the cargo specified in this note for columns B, C, and D (i.e. 2 feet, 6 feet, and 14 feet) must be increased in proportion.

"Minimum distance" means the least distance in any direction, whether vertical or horizontal.

[2]The total consignment on board at any time must not exceed transport indexes totaling 200 without prior authorization by the Department.

[3]Not to be carried unless screening by other cargo and bulkheads can be arranged in accordance with columns B, C, or D.

§ 176.710 Care following leakage or sifting of radioactive materials.

(a) In case of fire, collision, or breakage involving any shipment of radioactive materials, other than materials of low specific activity, the package of material must be segregated from unnecessary contact with personnel. In case of obvious leakage, or if the inside container appears to be damaged, the stowage area (hold, deck area, or compartment) containing this cargo must be isolated as much as possible to prevent radioactive material from entering any person's body through contact, inhalation, or ingestion. No person may handle the material or remain in the vicinity unless supervised by a qualified person.

(b) A hold or compartment in which leakage of radioactive materials has occurred may not be used for other cargo until it is decontaminated in accordance with the requirements of § 176.715.

(c) For reporting requirements, see § 171.15 of this subchapter.

§ 176.715 Contamination control.

Each hold, compartment, or deck area used for the transportation of low specific activity radioactive material as a full load must be surveyed with appropriate radiation detection instruments after each use. It may not be used again until the radiation dose rate at any accessible surface is less than 0.5 millirem per hour, and there is no significant removable radioactive surface contamination remaining.

Subpart N—Detailed Requirements for Corrosive Materials

§ 176.800 General stowage requirements.

(a) Each package of a corrosive material being transported on a vessel must be stowed well away from living quarters, foodstuffs, and cargo of an organic nature.

(b) Each package of a corrosive material must be stowed so as to be readily observable.

(c) A package of corrosive material may not be stowed over any combustible substance.

(d) Glass carboys containing corrosive material may not be stowed on board any vessel, other than a barge, more than two tiers high unless each carboy is boxed or crated with neck protection expending to the sides of the carboy box. This protective construction must be strong enough to permit stacking one on top of the other.

(e) A corrosive material may not be stowed over a hold or compartment containing cotton unless the deck is of steel and the hatch is fitted with a tight coaming. In addition, the deck must be tight against leakage and the corrosive material may not be stowed over the square of the hatch.

§ 176.805 On deck stowage.

(a) When corrosive materials being transported on a vessel are stowed "on deck", provisions must be made for leakage from any package to drain away from other cargo into an overboard scupper or freeing port. The drainage may not enter an enclosed drainage system other than a direct overboard scupper. If this stowage is not practical, sufficient clean dry sand must be placed under and around the lower tier of packages to absorb any leakage.

(b) Dunnage must be provided on the deck and arranged so that any leakage will be apparent.

(c) Any leakage that occurs must be washed down, using liberal quantities of water.

Subpart O—Detailed Requirements for Other Regulated Materials (ORM)

§ 176.900 Stowage of cotton and fibers generally.

(a) Cotton or fibers being transported on a vessel must be securely baled and bound. Each cotton or fiber bale must be covered with bagging on at least three-fourths of its surface, including both ends. Cut cotton linters may be accepted for transportation by vessel when baled and covered with bagging on the soft sides only if the bale is compressed to a density of at least 32 pounds per cubic foot and it is bound with at least six bands per bale. Any poorly compressed bale or any bale having damaged bindings may not be transported by vessel.

(b) Each wet bale must be stowed separately from any dry bales, preferably in a 'tween deck space and not overstowed. Any bale which is saturated with water may not be transported by vessel.

(c) Bales showing contact with oil or grease may not be accepted for transportation by vessel.

(d) Cotton or fibers must be stowed in a hold or compartment in accordance with the following requirements:

(1) All traces of oil or residue in the hold or compartment must be removed;

(2) A recently painted hold or compartment may not be used unless it is thoroughly dry;

(3) Each ventilation cowl serving the hold or compartment must be fitted with a spark screen;

(4) When a bulkhead of the hold or compartment is common with a boiler room, engine room, coal bunker, or gallery and subjected to heat, a wooden bulkhead must be erected between the bulkhead and any cotton or fibers. This wooden bulkhead must be at least 6 inches from a boiler room bulkhead, and at least 2 inches from an engine room, coal bunker, or galley bulkhead;

(5) Each 'tween deck hatch must be closed with hatch covers, tarpaulins, and dunnage; however, metal hatch covers which are sealed by other means to provide equivalent protection may be used;

(6) Each hold or compartment must be equipped with a carbon dioxide, steam smothering, or overhead water sprinkler system or other approved fixed smothering system. Before loading, the extinguishing system must be examined to ensure that it is in good working condition; and

(7) Each hold or compartment must be clear of all debris and swept broom clean before loading.

(e) Naked lights or any fire likely to produce sparks are not permitted on the vessel, dock area, or any lighters alongside during loading or unloading of cotton or fibers.

(f) Upon completion of stowage, each hatch opening must be completely closed. Where required, tarpaulins must be fitted and secured in place to provide a tight hold. During a period of temporary stoppage of loading or unloading, a hatch may be left open. However, a fire watch, designated by the master or officer-in-charge, must be stationed in the hold or compartment in which the cotton or fibers are stowed.

(g) At least one fire hose must be connected while cotton or fibers are being loaded or unloaded. Each fire pump must be operated before any loading or unloading. Pressure must be maintained on each fire main during the loading and the fire hose laid out ready for immediate use. Portable fire extinguishers must be placed to be readily available. The fire hose, fire pumps and fire extinguishers may be the vessel's equipment or shore equipment.

(h) Smoking is not permitted on a vessel during the loading or unloading of cotton or fibers except at those times and in those places designated by the master or officer-in-charge. "NO SMOKING" signs must be conspicuously posted in appropriate places and the officer in charge of the loading or unloading must see that they are observed.

(i) All cotton or fibers must be segregated in accordance with the requirements applicable to flammable solids (see § 176.83(b)).

(j) Cotton or fibers may be stowed in the same hold over bulk sulfur if the sulfur has been trimmed and leveled and the hold is thoroughly cleaned of sulfur dust. A tight floor of two 1-inch crossed clean dunnage boards must be laid on the sulfur before cotton or fibers are stowed. These substances may be stowed alongside each other in the same hold if they are separated by a tight dustproof wood bulkhead.

(k) Cotton or fibers may not be stowed in a 'tween deck hold over bulk sulfur in a lower hold unless the 'tween deck hold has been thoroughly cleaned of all sulfur dust and the 'tween deck hatch covers are in place and covered with tarpaulins and dunnage.

(l) Cotton or fibers may not be stowed in the same hold with any combustible liquid. Cotton or fibers may be stowed in a hold adjacent to any hold above, or any hold below one containing these materials if the holds are separated by a tight steel bulkhead or deck.

§ 176.901 Stowage of cotton or fibers with rosin or pitch.

Cotton or fibers being transported on a vessel may not be stowed in the same hold or compartment with rosin or pitch being transported on the same vessel. When separate stowage is not practicable, the cotton or fibers may be stowed in the same hold or compartment with rosin or pitch if they are separated by clean dunnage or a cargo of a non-com-

bustible nature. When stowage within the same hold or compartment involves large amounts of cotton or fibers and rosin or pitch, the rosin or pitch must be floored off with at least two layers of 1-inch dunnaging and the cotton or fibers stowed above.

§ 176.902 Stowage of cotton or fibers with vegetable, animal, or rosin oil.

(a) When practicable, fish oil, whale oil, vegetable oil, animal oil, or rosin oil being transported on a vessel may not be stowed in the same hold or compartment with any cotton or fibers being transported on the same vessel. When separate stowage is not practicable, the cotton and fibers must be stowed so that there is no contact with any of those oils. If cotton or other fibers are transported over any of those oils, a tight 2-inch floor of dunnage boards must be laid over the oils before the cotton or fibers are placed on top.

(b) Cotton or fibers may not be stowed in a hold below one in which any of those oils are stowed unless the 'tween deck hatch is fitted with a tight coaming and the deck is of steel and made tight against leakage.

§ 176.903 Stowage of cotton fibers with coal.

Cotton or fibers being transported on a vessel may not be stowed in the same hold with coal. They may be stowed in adjacent holds if the holds are separated by a tight steel bulkhead and the cotton or fibers are dunnaged at least 2 inches off the bulkhead. Cotton or fibers may be stowed in a hold above or below one in which coal is stowed if there is a tight steel intervening deck and all hatch covers are in place and covered with tarpaulins.

§ 176.904 Cotton or fibers with synthetic nitrate of soda.

Cotton or fibers being transported on a vessel may not be stowed in the same hold with synthetic nitrate of soda. They may be stowed in adjacent holds if the holds are separated by a tight steel bulkhead. Cotton or fibers may be stowed in a hold above or below one in which synthetic nitrate of soda is stowed if there is a tight steel intervening deck and all hatch covers are in place and covered with tarpaulins.

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302. The heading for Part 177 is revised to read as follows:

PART 177—CARRIAGE BY PUBLIC HIGHWAY

303. In Part 177 Table of Section, §§ 177.804 and 177.816 are deleted; §§ 177.803, 177.815, and 177.823 and the authority citation following the Table of Sections are revised to read as follows:

Sec.

177.803 Export and import shipments by domestic carriers by motor freight.
177.815 Lost or destroyed labels.
177.823 Marking and placarding motor vehicles.

AUTHORITY: The provisions of this Part 177 are issued under 18 U.S.C. 834 and 49 CFR 1.53(g).

§§ 177.800—177.802 and 177.805—177.810 [Amended]

304. In §§ 177.800 through 177.802 and §§ 177.805 through 177.810 the word "chapter" is changed to read "subchapter" each time it appears.

305. Section 177.803 is revised to read as follows:

§ 177.803 Export and import shipments by domestic carriers by motor vehicles.

See § 171.12 of this subchapter.

306. Section 177.804 is deleted.

307. In § 177.811 paragraph (a) is revised; paragraph (b) is added to read as follows:

§ 177.811 Astray shipments.

(a) Any carrier in possession of an astray shipment of hazardous materials (other than explosives) shall forward it promptly to its destination, if known, after inspection has shown the package to be in proper condition for transportation.

(b) If the package is not labeled and the exact classification of the contents is not determinable, the carrier shall apply a FLAMMABLE LIQUID label.

§ 177.812 [Amended]

308. In § 177.812(a) the word "chapter" is changed to read "subchapter".

309. § 177.815 is revised to read as follows:

§ 177.815 Lost or destroyed labels.

Each carrier shall maintain an adequate supply of the labels specified in Subpart E of Part 172 of this subchapter to replace those that become lost or destroyed. The carrier shall replace each lost or destroyed label based on the information on the shipping papers.

§ 177.816 [Reserved]

310. § 177.816 is deleted.

311. § 177.817 is revised to read as follows:

§ 177.817 Shipping papers.

(a) *General requirements.* A carrier may not transport a hazardous material unless it is accompanied by a shipping paper that is prepared in accordance with §§ 172.201, 172.202, and 172.203 of this subchapter.

(b) *Shipper certification.* A carrier initially accepting a hazardous material from a shipper may not transport that material unless it is accompanied by a shipping paper that includes the shipper's certification required by § 172.204 of this subchapter.

(c) *Requirements when interlining with carriers by rail.* A motor carrier shall mark on the shipping paper required by this section, if it offers or delivers a freight container or transport vehicle to a rail carrier for further transportation;

(i) A description of the freight container or transport vehicle; and

(ii) The kind of placard affixed to the freight container or transport vehicle.

(d) *Limitations upon applicability.* This section—

(1) Applies to ORM-A, B, or C only if its transportation also involves transportation by air or water; and—

(2) Applies to ORM-D only if its transportation also involves transportation by air.

(e) *Shipping paper accessibility—accident or inspection.* A driver of a motor vehicle containing hazardous material, and each carrier using such a vehicle, shall ensure that the shipping paper required by this section is readily available to, and recognizable by, authorities in the event of accident or inspection. Specifically, the driver and the carrier shall—

(1) Clearly distinguish the shipping paper, if it is carried with other shipping papers or other papers of any kind, by either distinctively tabbing it or by having it appear first; and

(2) Store the shipping paper as follows:

(i) When the driver is at the vehicle's controls, the shipping paper shall be: (A) Within his immediate reach while he is restrained by the lap belt; and (B) either readily visible to a person entering the driver's compartment or in a holder which is mounted to the inside of the door on the driver's side of the vehicle.

(ii) When the driver is not at the vehicle's controls, the shipping paper shall be: (A) In a holder which is mounted to the inside of the door on the driver's side of the vehicle; or (B) on the driver's seat in the vehicle.

§§ 177.819, 177.821 and 177.822 [Amended]

312. In §§ 177.819, 177.821, and 177.822, the word "chapter" is changed to read "subchapter" each time it appears.

313. § 177.823 is revised to read as follows:

§ 177.823 Marking and placarding motor vehicles.

(a) A carrier may not move a transport vehicle containing a hazardous material unless the vehicle is marked and placarded in accordance with Part 172 of this subchapter, or unless, in an emergency—

(1) The vehicle is escorted by a representative of a state or local government;

(2) The carrier has permission from the Department; or—

(3) Movement of the transport vehicle is necessary to protect life or property.

§§ 177.824 and 177.834—177.840 [Amended]

314. In §§ 177.824 and 177.834 through 177.840 the word "chapter" is changed to read "subchapter" each time it appears.

315. In § 177.841 paragraph (e) is revised to read as follows:

§ 177.841 Poisons.

* * * * *

(e) A carrier may not transport a package bearing a poison label in the same transport vehicle with material that is marked as or known to be foodstuff, feed or any other edible material

intended for consumption by humans or animals.

§§ 177.842, 177.843, 177.848, 177.853—177.861, and 177.870 [Amended]

316. In §§ 177.842, 177.843, 177.848, 177.853 through 177.861, and 177.870 the word "chapter" is changed to read "subchapter" each time it appears in the sections.

Effective date: This amendment is effective July 1, 1976. However—(1) Materials newly identified as hazardous materials by this amendment and not previously subject to the Department's Hazardous Materials Regulations need not be in compliance with the Department's Hazardous Materials Regulations when offered or accepted for transportation or transported in commerce until January 1, 1977.

(2) The new or modified marking, labeling, and shipping paper requirements provided in this amendment need not be complied with until January 1, 1977, except that compliance with the shipping paper format provisions of 49 CFR 172.201(a)(1) is not mandatory until July 1, 1977. (In addition, see note in 49 CFR 172.204(a) with respect to delayed compliance date for use of the newly worded shipper's certification statement provided for in that section.)

(3) The new placarding requirements provided in this amendment (Subpart F of Part 172) need not be complied with until July 1, 1977, except that compliance with the placarding requirements issued under Docket HM-102 (39 FR 2768, January 24, 1976; 40 FR 57433, December 10, 1975) pertaining to tank cars containing combustible liquids is required on or after January 1, 1977.

(4) When the new or modified marking, labeling, or shipping paper requirements are not complied with (as authorized in paragraph (2) above) or the new placarding requirements are not complied with (as authorized by paragraph (3) above) during the period July 1, 1976 to the mandatory compliance dates provided above, the applicable placarding, marking, labeling, and shipping paper requirements in effect on June 30, 1976 shall be complied with.

Issued in Washington, D.C., on March 31, 1976.

JAMES T. CURTIS, Jr.,
Director,
Materials Transportation Bureau.

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